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QASHQADARYO VILOYATIDA KICHIK SANOAT ZONALARINI TASHKIL ETISHNING HUDUDIY JIHATLARI

Annotatsiya: *Maqolada Qashqadaryo viloyatida kichik sanoat zonalarini tashkil etishning hududiy xususiyatlari, mavjud resurslar, transport-kommunikatsiya infratuzilmasi, mehnat resurslari va iqtisodiy infratuzilmaning holati tahlil qilinadi. Hududiy tafovutlar, sanoat salohiyati va investitsion imkoniyatlar asosida kichik sanoat zonalarini tashkil etish bo'yicha ilmiy asoslangan takliflar ishlab chiqiladi.*

Kalit so'zlar: *kichik sanoat zonalari, hududiy rivojlanish, Qashqadaryo, iqtisodiy geografiya, infratuzilma, mehnat resurslari.*

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TERRITORIAL ASPECTS OF ORGANIZATION OF SMALL INDUSTRIAL ZONES IN KASHKADARYA REGION

Abstract: *The article analyzes the territorial features of the organization of small industrial zones in the Kashkadarya region, the state of existing resources, transport and communication infrastructure, labor resources and economic infrastructure. Based on territorial differences, industrial potential and investment opportunities, scientifically based proposals are developed for the organization of small industrial zones.*

Keywords: *small industrial zones, territorial development, Kashkadarya, economic geography, infrastructure, labor resources.*

Kirish. So'nggi o'n yilliklarda sanoatni hududiy diversifikatsiya qilish va kichik biznesni qo'llab-quvvatlash maqsadida dunyoning ko'plab davlatlarida kichik sanoat zonalari (KSZ) tashkil etilishi keng ommalashgan. Masalan, Xitoy, Hindiston, Turkiya va Janubi-Sharqiy Osiyo mamlakatlarida KSZlar sanoatning barqaror o'sishida muhim rol o'ynab, eksport salohiyatini oshirish, innovatsiyalarni tatbiq etish va yangi ish o'rinlarini yaratish uchun asos bo'lib xizmat qilmoqda. Xitoyning "Industrial Cluster" modeli, Turkiyaning "Organize Sanayi Bölgeleri" (OSB) tajribasi yoki Hindistonning "Micro, Small and Medium Enterprises (MSME) Clusters" loyihalari mahalliy resurslarga asoslangan kichik ishlab chiqarish tarmoqlarini hududiy tamoyillar asosida rivojlantirishga yo'naltirilgan.

Ushbu amaliyotlar iqtisodiy o‘sishning hududiy muvozanatini saqlashda muhim strategik vositaga aylangan.

O‘zbekiston Respublikasida ham kichik sanoat zonalarini tashkil etish davlat siyosatining ustuvor yo‘nalishlaridan biriga aylangan. Prezident qarorlariga asosan 2017-yildan boshlab respublika miqyosida KSZlar tashkil etila boshlandi. Mazkur zonalar hududlarda kichik va o‘rta biznes vakillari uchun qulay muhit yaratish, soliq va bojxona imtiyozlarini joriy etish, yer maydonlarini ajratish va infratuzilmani yaxshilash kabi yo‘nalishlarni qamrab oladi. Ayni paytda Toshkent viloyati, Farg‘ona vodiysi va Navoiy viloyatidagi tajribalar shuni ko‘rsatadiki, zamonaviy infratuzilma bilan jihozlangan KSZlar iqtisodiy faollikni oshirishda ijobiy natijalar bermoqda. Shuningdek, davlat-xususiy sheriklik asosida investitsiya loyihalarini amalga oshirish orqali KSZlar innovatsion ishlab chiqarish markazlariga aylanishi kutilmoqda.

Qashqadaryo viloyatida ham KSZlarni tashkil etish va ularni rivojlantirish masalasi dolzarb hisoblanadi. Viloyatning tabiiy resurslarga boyligi, mehnat resurslarining yuqoriligi, shuningdek, transport-logistika imkoniyatlarining mavjudligi ushbu jarayon uchun zamin yaratadi. So‘nggi yillarda viloyatda “Qarshi kichik sanoat zonasi”, “Shahrisabz kichik sanoat zonasi” kabi muhim hududiy loyihalar ishga tushirilgan bo‘lib, ular orqali mahalliy xomashyoga asoslangan ishlab chiqarish yo‘lga qo‘yilmoqda. Ammo bu jarayon hali to‘liq imkoniyatlardan foydalanilmayotganini ko‘rsatadi. Ayniqsa, har bir tumanning hududiy ixtisoslashuvini hisobga olgan holda KSZlarni tashkil etish ilmiy yondashuvni talab qiladi. Shu bois, Qashqadaryo viloyatida kichik sanoat zonalarini shakllantirishda hududiy jihatlarni chuqur tahlil qilish muhim ahamiyat kasb etadi.

Asosiy qism. Bugungi kunda hududlarni kompleks rivojlantirish, ishsizlikni kamaytirish va iqtisodiyotning tarkibiy tuzilmasini diversifikatsiya qilish O‘zbekiston taraqqiyot strategiyasining ustuvor yo‘nalishlaridan biridir. Ayniqsa, mintaqaviy tafovutlarni kamaytirish va chekka hududlarda iqtisodiy faollikni oshirish uchun kichik sanoat zonalarini tashkil etish dolzarb masalaga aylangan. Bu jarayon Qashqadaryo viloyati misolida ham alohida ahamiyat kasb etadi, chunki viloyat aholisining katta qismi mehnat yoshida bo‘lib, ish o‘rinlariga bo‘lgan talab yuqori. Shuningdek, mavjud tabiiy resurslar, transport yo‘llari va iqlimiy sharoitlar kichik sanoat zonalari orqali ishlab chiqarish tarmoqlarini hududiy ixtisoslashuv asosida rivojlantirish imkonini beradi. Shu bois, Qashqadaryo viloyatida KSZlarni tashkil etish masalasini ilmiy asosda o‘rganish va hududiy imkoniyatlarga mos rivojlanish yo‘llarini belgilash zamonaviy iqtisodiy geografiya va hududiy rejalashtirish uchun nihoyatda dolzarbdir.

O‘zbekiston Respublikasi Prezidentining “Qashqadaryo viloyatida kichik sanoat zonalarini tashkil etish chora-tadbirlari tog‘risida”gi qarori (PQ–3635, 29.03.2018 y.) qabul qilindi. Mazkur qaror Qashqadaryo viloyatida iqtisodiy faollikni oshirish, mahalliy ishlab chiqaruvchilarni qo‘llab-quvvatlash va yangi ish o‘rinlari yaratish maqsadida kichik sanoat zonalarini shakllantirishga qaratilgan muhim huquqiy asos bo‘lib xizmat qiladi. Qarorga muvofiq, viloyatning turli tumanlarida ishlab chiqarish, qayta ishlash va xizmat ko‘rsatish yo‘nalishlari

bo‘yicha ixtisoslashgan kichik sanoat zonalari tashkil etilishi belgilangan. Ushbu zonalarga ajratiladigan yer maydonlari tadbirkorlarga ochiq tanlov asosida ajratilishi, kommunikatsiya tarmoqlari esa davlat tomonidan bosqichma-bosqich tortilishi ko‘zda tutilgan. Bu esa kichik biznes vakillariga qulay muhit yaratish, investitsiyalarni jalb etish va zamonaviy ishlab chiqarish infratuzilmasini shakllantirish uchun muhim omil hisoblanadi.

Qarorda, shuningdek, sanoat zonalaridagi rezidentlarga soliq va bojxona imtiyozlari, kreditlar, kompensatsiyalar va davlat-xususiy sheriklik asosida ko‘maklashish mexanizmlari belgilangan. Bu yondashuv nafaqat iqtisodiy samaradorlikni oshiradi, balki hududiy tengsizlikni kamaytirish, chekka tumanlarda aholi bandligini ta’minlash va ichki migratsiya oqimini nazorat qilishda ham ijobiy rol o‘ynaydi. Ayniqsa, Qarshi, Qamashi, Shahrisabz, Kitob, Muborak, Qamashi, Chiroqchi tumanlari va Qarshi hamda Shahrisabz shahrida KSZlar tashkil etilishi ularning mavjud tabiiy va mehnat resurslarini chuqur qayta ishlash orqali mahalliy iqtisodiyotni mustahkamlashga xizmat qiladi. Qaror ijrosini tizimli va ilmiy asosda amalga oshirish esa uzoq muddatli hududiy barqarorlik va sanoatlashuv jarayonining muhim kafolatidir.

Qashqadaryo viloyati O‘zbekiston Respublikasining janubiy qismida joylashgan bo‘lib, geografik jihatdan tog‘li, tog‘oldi va cho‘l hududlarni o‘z ichiga oladi. Tabiiy-geografik tuzilmasining murakkabligi viloyatda turli xo‘jalik tarmoqlarining hududiy ixtisoslashuviga zamin yaratgan. Tog‘li hududlar (Shahrisabz, Yakkabog‘, Kitob) asosan meva-sabzavotchilik va chorvachilik bilan shug‘ullansa, tekislik tumanlari (Nishon, Mirishkor, Muborak) neft-gaz va paxtachilikka ixtisoslashgan. Shuningdek, viloyatda 14 ta tuman va 2 ta shahar (Qarshi va Shahrisabz) mavjud bo‘lib, ular iqtisodiy va transport-logistika jihatdan o‘zaro bog‘langan tizimni tashkil etadi.

Viloyat aholisi 3,5 milliondan ortiq bo‘lib, mehnat resurslari bilan yaxshi ta’minlangan. Aholining salmoqli qismini mehnatga layoqatli yoshdagilar tashkil etadi, bu esa ishlab chiqarish va xizmat ko‘rsatish sohalari uchun yirik inson resurslarini yaratadi. Ishsizlik darajasining nisbatan yuqoriligi kichik sanoat zonalarini tashkil etish orqali yangi ish o‘rinlari yaratish zaruratini kuchaytiradi. Ayni paytda Qashqadaryo viloyatida kichik biznes va xususiy tadbirkorlik faoliyati faol rivojlanmoqda, ammo ishlab chiqarish infratuzilmasi va investitsiyaviy faollik ba’zi hududlarda yetarlicha darajada shakllanmagan.

Viloyat transport tizimi ham mintaqaning iqtisodiy rivojida muhim rol o‘ynaydi. Qarshi – Termiz temir yo‘li, xalqaro ahamiyatdagi avtomobil yo‘llari va Qarshi xalqaro aeroporti viloyatni respublikaning boshqa hududlari va qo‘shni davlatlar bilan bog‘lab turadi. Bu esa logistika imkoniyatlarini kengaytiradi va eksport-import jarayonlarini jadallashtirish imkonini beradi. Shuningdek, bu infratuzilma kichik sanoat zonalarining raqobatbardoshligini oshirish, ishlab chiqarilgan mahsulotlarni ichki va tashqi bozorga tez yetkazib berish uchun muhim strategik omildir.

Resurs bazasining mavjudligi kichik sanoat zonalarini joylashtirishda hal qiluvchi omillardan biridir. Qashqadaryo viloyatining tog‘li hududlari – Shahrisabz,

Kitob va Yakkabog‘ tumanlari foydali qazilmalarga, xususan marmar, ohaktosh, gips kabi qurilish materiallariga boyligi bilan ajralib turadi. Shu bois, mazkur hududlarda tog‘-kon sanoati va qurilish materiallari ishlab chiqarishga ixtisoslashgan KSZlarni tashkil etish iqtisodiy jihatdan maqsadga muvofiqdir. Bunday yondashuv bir tomondan mahalliy xomashyoni chuqur qayta ishlashni ta’minlasa, boshqa tomondan tog‘li hududlarda aholi bandligini oshirish imkonini beradi. Shu bilan birga, Qamashi va Dehqonobod tumanlarida mavjud paxta xomashyosi hamda chorvachilik resurslari asosida to‘qimachilik, yog‘-moy va go‘sht-sut mahsulotlarini qayta ishlovchi kichik korxonalar zonalarini tashkil etish iqtisodiy samaradorlikni oshiradi.

Transport-kommunikatsiya infratuzilmasi kichik sanoat zonalarining faoliyat yuritishida eng muhim tashqi sharoitlardan biridir. Qarshi shahri va uning atrofida joylashgan temir yo‘l, xalqaro avtomobil trassasi hamda Qarshi xalqaro aeroporti zonalarni yirik bozorlarga ulashda strategik imkoniyat yaratadi. Shu bois, viloyat markazida hamda unga tutash Qamashi, Kasbi va Guzor tumanlarida logistika markazlari, omborxona va eksport-importga xizmat qiluvchi infratuzilmalarni birlashtirgan sanoat klasterlarini barpo etish mumkin. Bu nafaqat ishlab chiqarilgan mahsulotlarning bozorga tez yetkazilishini ta’minlaydi, balki tashqi investorlar uchun ham logistik qulayliklar yaratadi.

Mehnat resurslarining taqsimlanishi KSZlar joylashuvi va ularning ixtisoslashuvi uchun yana bir muhim mezondir. Qashqadaryo viloyatining Kasbi, Qarshi va Yakkabog‘ tumanlari aholisi zich yashaydi, ayniqsa yoshlar soni yuqori. Bu tumanlarda sanoat tarmoqlari, ayniqsa yengil sanoat, xizmat ko‘rsatish va qadoqlash ishlab chiqarishlariga katta hajmdagi ishchi kuchi talab etiladi. Ushbu tumanlarda mehnat talab qiluvchi, kam texnologik, ammo yuqori bandlik yaratuvchi korxonalarni tashkil etish nafaqat iqtisodiy samaradorlikni oshiradi, balki ijtimoiy barqarorlikka ham xizmat qiladi. Shuningdek, viloyatdagi kasb-hunar maktablari va kollejlar bilan integratsiyalashgan holda ishchi kuchini malakali tayyorlash imkoniyati mavjud.

Ekologik va iqlimiy sharoitlar sanoat faoliyatida xavfsizlikni ta’minlash uchun doimo hisobga olinishi kerak. Qashqadaryoning Mirishkor, Nishon, Muborak, Koson va Kasbi kabi tekislik tumanlari asosan quruq iqlimga ega bo‘lib, suv ta’minoti cheklangan. Bu hududlarda kichik sanoat zonalarini tashkil etishda ekologik xavfsizlikni ta’minlovchi texnologiyalar, xususan suvni tejovchi ishlab chiqarish usullarini joriy etish zarur. Bundan tashqari, chiqindilarni qayta ishlash, havoni tozalovchi filtrlash tizimlari va yashil energiya manbalaridan foydalanish bo‘yicha alohida chora-tadbirlar ishlab chiqilishi lozim. Ekologik muvozanatni saqlagan holda sanoatni rivojlantirish uzoq muddatli barqarorlikning asosiy garovidir.

Qashqadaryo viloyatida hozirgi kunga kelib 10 dan ortiq kichik sanoat zonalari (KSZ) tashkil etilgan bo‘lib, ular viloyat iqtisodiyotida muhim rol o‘ynamoqda. Jumladan, “Qarshi KSZ”, “Shahrisabz KSZ”, “G‘uzor KSZ” kabi zonalarda turli yo‘nalishdagi kichik korxonalar faoliyat yuritmoqda. Ular orasida nisbatan muvaffaqiyatli ishlayotganlari ishlab chiqarish hajmi, ish o‘rinlari soni

hamda mahalliy xomashyoni qayta ishlash bo‘yicha sezilarli natijalarga erishmoqda. Ayniqsa, “Qarshi KSZ” viloyat markazida joylashgani bois logistika va mehnat resurslariga yaqinligi tufayli samarali ishlamoqda.

Biroq barcha zonalar birdek rivojlanayotganini aytish qiyin. Ayrim sanoat zonalarida infratuzilmaning, xususan elektr energiyasi, gaz, suv tarmoqlari va yo‘l infratuzilmasining to‘liq ta’minlanmagani sababli tadbirkorlik faoliyati sekin bormoqda. Shu bilan birga, ayrim zonalarda muhandislik-kommunikatsiya tizimlari hali ham to‘liq barpo etilmagan, bu esa yangi investorlarni jalb qilishga salbiy ta’sir ko‘rsatmoqda. Ayni paytda kichik sanoat zonalari hududlarida ishlab chiqarish sexlari qurilgan bo‘lsa-da, ularning bir qismi bo‘sh turgani kuzatilmoqda.

Kichik sanoat zonalarining rivojlanishiga salbiy ta’sir ko‘rsatayotgan muammolardan yana biri bu – investorlar yetishmasligi va yer ajratishdagi byurokratik to‘siqlardir. Tadbirkorlar ko‘pincha yer olish jarayonining cho‘zilib ketishi, ruxsatnomalarning kechikishi, shartnoma va imtiyozlar bo‘yicha noaniqliklar tufayli investitsiyalardan voz kechishga majbur bo‘lishmoqda. Mazkur muammolarni hal etish uchun hududiy hokimliklar, Investitsiyalar va tashqi savdo boshqarmalari, hamda “Kichik sanoat zonalari direksiyasi” o‘rtasida aniq muvofiqlashtirish mexanizmlarini joriy etish zarur. Shu orqali mavjud KSZlar salohiyatidan to‘liq foydalanish hamda yangi loyihalarni jalb qilish imkoniyati ortadi.

Kichik sanoat zonalarining to‘laqonli faoliyat yuritishida yer ajratish va ruxsatnoma olish jarayonlaridagi byurokratik to‘siqlar jiddiy muammo bo‘lib qolmoqda. Ko‘plab tadbirkorlar turli idoralarga murojaat qilish, hujjatlarni takroran topshirish va javoblarni uzoq kutish natijasida ishlab chiqarish jarayonini boshlashda muammolarga duch kelishmoqda. Ushbu holatlarni bartaraf etish uchun “yagona darcha” tamoyilini to‘liq joriy etish, barcha jarayonlarni raqamlashtirish va onlayn platformalar orqali arizalarni ko‘rib chiqish tizimini yo‘lga qo‘yish dolzarb masaladir. Bu nafaqat shaffoflikni ta’minlaydi, balki vaqt va xarajatlarni qisqartiradi.

Yana bir asosiy muammo bu – sanoat zonalarining infratuzilmaviy jihatdan to‘liq ta’minlanmaganligidir. Elektr energiyasi, gaz va suv tarmoqlaridagi uzilishlar ishlab chiqarishning barqarorligini izdan chiqaradi va investorlar uchun jozibadorlikni pasaytiradi. Bunday muammolarning oldini olish uchun har bir KSZ hududida muqobil energiya manbalaridan, xususan quyosh va shamol energiyasidan foydalanish mexanizmlarini ishlab chiqish va amaliyotga joriy etish maqsadga muvofiq. Shu bilan birga, energiya tejamkor texnologiyalarni qo‘llashni rag‘batlantirish orqali zonalarning barqaror ishlashi ta’minlanadi.

Kichik sanoat zonalaridagi yana bir muhim masala – mahalliy investorlar faolligining pastligidir. Bu holat, asosan, moliyaviy resurslarning cheklanganligi, kredit olish shartlarining murakkabligi va xavflarning yuqoriligi bilan bog‘liq. Ushbu muammoni hal etish uchun kichik biznes subyektlariga kreditlar bo‘yicha yengilliklar yaratish, davlat subsidiyalari va grant dasturlarini kengaytirish, shuningdek soliq imtiyozlarini berish zarur. Investitsiyaviy muhitning yaxshilanishi

nafaqat mavjud zonalarni rivojlantiradi, balki yangi loyihalarni jalb qilishga ham xizmat qiladi.

Xulosa. Qashqadaryo viloyatida kichik sanoat zonalarini tashkil etish uchun zarur infratuzilma, mehnat resurslari, tabiiy xomashyo bazasi va transport-kommunikatsiya tarmoqlari mavjud bo‘lib, bu jarayonni hududiy jihatdan puxta rejalashtirish orqali yuqori samaradorlikka erishish mumkin. Ayniqsa, har bir tuman va shaharning tabiiy-iqtisodiy xususiyatlarini chuqur tahlil qilish orqali sanoat zonalarini ixtisoslashgan tarzda joylashtirish – ya’ni Shahrisabz, Yakkabog‘ va Kitobda qurilish materiallari sanoati, Dehqonobod va Qamashida qishloq xo‘jaligi mahsulotlarini qayta ishlash, Kasbi, Qarshida mehnat talab qiluvchi ishlab chiqarish tarmoqlarini rivojlantirish – aholi bandligini oshirish, mahalliy xomashyodan samarali foydalanish va eksport hajmini ko‘paytirish imkonini beradi. Shu bilan birga, ekologik omillarni inobatga olgan holda muqobil energiya texnologiyalarini joriy etish zonalarning uzoq muddatli barqaror faoliyatini ta’minlaydi.

Shu asosda, birinchidan, har bir tumanning ixtisoslashuvi asosida kichik sanoat zonalarini joylashtirish bo‘yicha strategik hududiy reja ishlab chiqilishi lozim. Ikkinchidan, mavjud va yangi zonalar uchun alohida infratuzilma rivojlantirish dasturini qabul qilish, jumladan, muhandislik tarmoqlari, logistika tizimi va raqamli xizmatlar tarmog‘ini kengaytirish zarur. Uchinchidan, mahalliy oliy ta’lim va ilmiy-tadqiqot muassasalari bilan hamkorlikda innovatsion ishlab chiqarish texnologiyalarini joriy etish hamda kadrlar tayyorlashda sanoat zonalari bilan uzviy integratsiyani kuchaytirish orqali kichik sanoat zonalari nafaqat iqtisodiy, balki ilmiy-amaliy markazlarga aylanishi mumkin. Bu esa Qashqadaryo viloyatining sanoat salohiyatini yangi bosqichga olib chiqadi.

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BOSHLANG‘ICH YOSHDAGI BOLALARDA NEMIS TILINI TALAFFUZ BILAN O‘RGATISHNING SAMARALI USULLARI

Annotatsiya: *Mazkur maqolada boshlang‘ich yoshdagi bolalarga nemis tilini o‘rgatishda talaffuzga alohida e’tibor qaratishning ahamiyati yoritilgan. Talaffuzning to‘g‘ri shakllanishi bolaning kelajakdagi til kompetensiyasini shakllantirishda muhim omil hisoblanadi. Tadqiqotda nemis tilining fonetik xususiyatlari, bolalar uchun qulay metodlar, ya’ni o‘yinli mashg‘ulotlar, vizual va audio vositalardan foydalanish, she’r va qo‘shiqlar orqali talaffuzni mustahkamlash kabi samarali usullar tahlil qilinadi. Shuningdek, o‘qituvchi nutqining etalon rol o‘ynashi, individual yondashuv va motivatsiyaning o‘rni ham ko‘rsatib berilgan. Xulosa o‘rnida, boshlang‘ich sinf o‘quvchilarining psixologik xususiyatlariga moslashgan dars metodikasi orqali nemis tilidagi to‘g‘ri talaffuzni shakllantirish mumkinligi ta’kidlangan.*

Kalit so‘zlar:*boshlang‘ich ta’lim, nemis tili, talaffuz, fonetika, o‘yinli metod, audiovizual vosita, til o‘rganish, bolalar psixologiyasi, motivatsiya, til kompetensiyasi****.***

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EFFECTIVE METHODS OF TEACHING GERMAN TO PRIMARY SCHOOL CHILDREN WITH PRONUNCIATION

Abstract: *This article highlights the importance of paying special attention to pronunciation when teaching German to primary school children. The correct formation of pronunciation is an important factor in the formation of a child's future language competence. The study analyzes the phonetic features of the German language, effective methods such as child-friendly methods, namely, game activities, the use of visual and audio aids, and strengthening pronunciation through poems and songs. The role of the teacher's speech as a model, the role of an individual approach and motivation are also shown. In conclusion, it is emphasized that it is possible to form correct pronunciation in German through teaching methods adapted to the psychological characteristics of primary school students.*

Keywords: *Grundbildung, deutsche Sprache, Aussprache, Phonetik, spielerische Methode, audiovisuelle Hilfsmittel, Spracherwerb, Kinderpsychologie, Motivation, Sprachkompetenz.*

Boshlang‘ich yoshdagi bolalarda chet tilini, xususan nemis tilini o‘rgatish jarayoni bolaning individual xususiyatlari, psixologik tayyorgarligi hamda tilga bo‘lgan qiziqishi asosida shakllanadi. Bu jarayonda talaffuzni to‘g‘ri shakllantirish alohida o‘rin tutadi, chunki talaffuz til o‘rgatishning eng muhim tarkibiy qismlaridan biridir. Talaffuzdagi muammolar bola nutqining to‘g‘ri va ravon shakllanishiga xalaqit beradi. Ayniqsa, fonetik tizimi ona tilidan keskin farq qiladigan tillarda, masalan, nemis tilida, talaffuzni o‘zlashtirish bosqichma-bosqich, tizimli va metodik yondashuvni talab etadi. Boshlang‘ich sinf o‘quvchilari hali talaffuz nuqtai nazaridan rivojlanayotgan bo‘lishadi, ular tovushlarni eshitib, taqlid asosida o‘zlashtirishga moyil bo‘lishadi. Shu sababli aynan bu davrda fonetik kompetensiyani shakllantirishga qaratilgan mashg‘ulotlar yuqori samaradorlikka ega bo‘lishi mumkin.Nemis tilida talaffuzga oid xususiyatlar, masalan, umlaut tovushlari (ä, ö, ü), ichki bo‘g‘inlarda urg‘uning o‘zgarishi, jarangli va jarangsiz undoshlar o‘rtasidagi farqlar o‘zbek tilidagi tovush tizimiga unchalik mos kelmasligi sababli boshlang‘ich bosqichda murakkablik tug‘diradi. Bolalarning bu tovushlarni to‘g‘ri talaffuz qilishi uchun ularni eng avvalo eshitishga o‘rgatish, ya’ni fonemik eshituvni rivojlantirish zarur. Bunda audiovizual vositalardan foydalanish muhim rol o‘ynaydi. Masalan, so‘zlar va gaplar nemis tilida talaffuzi bilan eshittirilsa, bolalarda fonetik eshituv shakllanadi. Bu eshituv orqali ular tovushlarning qanday aytilishini, urg‘u qayerga tushishini, intonatsiyani qanday ishlatishni o‘rganishadi. Shuningdek, bolalar multfilmlar, animatsiyalar va qo‘shiqlar orqali tovushlarni to‘g‘ri talaffuz qilishga o‘rgatilsa, bu jarayon samarali kechadi.Talaffuzni o‘rgatishda o‘yinli metodlardan foydalanish ham o‘zini oqlagan yondashuvdir. Bolalar bilan ishlashda ularning diqqatini jamlash, faol ishtirokini ta’minlash va qiziqishini uyg‘otish eng muhim omillardandir. O‘yin orqali til o‘rganish, ayniqsa fonetik o‘yinlar, bolalarga kerakli tovushlarni takrorlashga, talaffuz qilishga, so‘z va gaplarda to‘g‘ri aytishga yordam beradi. Masalan, tovushlarni farqlash o‘yini, tovushlarga mos rasm topish, tovushli domino, ovozga ko‘ra harakat bajarish singari faoliyatlar orqali bolalar bexosdan to‘g‘ri talaffuzni o‘zlashtiradilar. Ular o‘yin orqali tilni eshitadilar, ko‘radilar va harakat qilish orqali faol o‘zlashtiradilar.Shuningdek, mashg‘ulotlarda she’rlar, ifodali gaplar va qo‘shiqlardan foydalanish talaffuzni o‘zlashtirishga katta yordam beradi. Ritm va intonatsiyani to‘g‘ri eshitish, musiqiy ifodani taqlid qilish orqali bolalar tovushlarni ham to‘g‘ri talaffuz qilishni o‘rganadilar. Nemis tilidagi bolalar uchun mo‘ljallangan qo‘shiqlar, masalan, “Alle meine Entchen” yoki “ABC-Lied” kabi qo‘shiqlar bolaning fonetik eshituvini faollashtiradi. Har bir qo‘shiqda tovushlar takrorlanadi, urg‘u aniq eshitiladi va bu orqali bola talaffuzga e’tibor bilan yondashadi.Talaffuzni o‘rgatishda o‘qituvchining roli beqiyosdir. O‘qituvchi bolaning til o‘rganishiga namuna bo‘lishi kerak. Ayniqsa, talaffuzda to‘g‘ri nutq namunalarini taqdim etish, har bir so‘zning to‘g‘ri aytilishini ko‘rsatib berish, bolani

eshitishga va taqlid qilishga undash juda muhim. O‘qituvchi har bir o‘quvchiga individual yondashib, uning talaffuzdagi kamchiliklarini aniqlab, tuzatishlar kiritishi kerak. Masalan, ba’zi bolalar “ch” va “sch” tovushlarini aralashtirib yuborishi mumkin, bu holatda o‘qituvchi ko‘proq diqqatni bu tovushlarni farqlashga qaratadi. Bola o‘z xatosini sezib, to‘g‘ri aytishga harakat qila boshlaydi.Shuningdek, til o‘rganishda motivatsiyaning o‘rni ham nihoyatda muhim. Boshlang‘ich yoshdagi bolalarda til o‘rganishga nisbatan ichki motivatsiya hali to‘liq shakllanmagan bo‘lishi mumkin. Shuning uchun, o‘qituvchi tomonidan yaratilgan qiziqarli muhit, rag‘batlantirish, maqtov va muvaffaqiyat hissi bolaning talaffuzga bo‘lgan e’tiborini oshiradi. Bola o‘zini muvaffaqiyatli his qilsa, u talaffuz ustida mustaqil ishlashga ham tayyor bo‘ladi. Shu nuqtai nazardan, baholash tizimi ham rag‘batlantiruvchi bo‘lishi kerak. Har bir kichik yutuq e’tibordan chetda qolmasligi kerak.Talaffuzni o‘rgatish davomida texnik vositalardan foydalanish ham samaradorlikni oshiradi. Masalan, fonetik trenajyorlar, ovoz yozuvchi qurilmalar orqali bolalar o‘z talaffuzlarini eshitishlari, ularni tahlil qilishlari va taqqoslash imkoniga ega bo‘lishadi. Bu ularning o‘z-o‘zini baholash, o‘z ustida ishlash ko‘nikmasini shakllantiradi. Ayniqsa, interaktiv dars platformalari, masalan, “Duolingo for Kids” yoki “LingoKids” singari dasturlar orqali tovushlarni mashq qilish, darsliklardan tashqari amaliy faoliyatni boyitadi.Nemis tilining talaffuz xususiyatlariga doir mashg‘ulotlarni rejalashtirishda bolaning eshitish, ko‘rish, harakat va nutq faoliyatini uyg‘unlashtirgan holda olib borish kerak. Bunday ko‘p kanalli yondashuv bolaning ongida tovushlar, so‘zlar va gaplar yaxlit ko‘rinishda shakllanishini ta’minlaydi. Masalan, nemis tilida “r” tovushi orqa til bilan talaffuz qilinadi, bu tovushni to‘g‘ri aytish uchun avvalo bola uni aniq eshitishi, keyin tilning harakatini anglab yetishi, so‘ngra takrorlashi zarur. Bu jarayonda og‘iz bo‘shlig‘ining harakati, tovush chiqarish organlarining joylashuvi, nafas olish ritmi ham ahamiyatga ega. Bunday murakkab jarayonni bolalarga oddiy, tushunarli va interaktiv tarzda yetkazish — o‘qituvchining metodik salohiyatiga bog‘liq.Bundan tashqari, sinfdan tashqari faoliyatlar, ya’ni nemis tilida qisqa dialoglar, sahna ko‘rinishlari, dramatizatsiya va hikoya aytish mashg‘ulotlari orqali bolalar talaffuzni amaliyotda mustahkamlashlari mumkin. Bu orqali ular faqat so‘zlarni emas, balki gaplar ichidagi urg‘u, intonatsiya va talaffuz xususiyatlarini o‘zlashtiradilar. Bola o‘zini nemis tilida ifoda qilishga harakat qilar ekan, u talaffuzga e’tiborli bo‘ladi, nutqi silliq va ifodali bo‘lishiga intiladi.Xulosa qilib aytganda, boshlang‘ich yoshdagi bolalarda nemis tilining talaffuzini o‘rgatish murakkab, ammo ayni paytda o‘ta muhim jarayondir. Bu jarayon metodik jihatdan puxta rejalashtirilgan bo‘lishi, bolaning yosh va psixologik xususiyatlariga moslashtirilgan bo‘lishi, ko‘rgazmali, audiovizual, o‘yinli va interaktiv usullar asosida olib borilishi zarur. O‘qituvchining nutqi, bolaga individual yondashuvi, motivatsiya berish uslubi, texnik vositalardan foydalanish qobiliyati va darsni qiziqarli tashkil qilish mahorati bu jarayonning muvaffaqiyatini belgilab beradi. Bolalarning to‘g‘ri talaffuzni o‘zlashtirishi esa ularning kelajakdagi nemis tilida erkin va ravon muloqot qila olishlariga mustahkam asos yaratadi.

XULOSA

Boshlang‘ich yoshdagi bolalarga nemis tilini, ayniqsa talaffuzni samarali o‘rgatish — chet tili ta’limining poydevorini qo‘yish bilan barobar. Fonetik kompetensiyaning shakllanishi nafaqat to‘g‘ri nutq, balki kelajakda o‘z fikrini chet tilida aniq, ravon va tushunarli ifoda etish imkonini beradi. Shu boisdan talaffuzni o‘rganish jarayonida bola yoshiga mos, eshituvga tayanadigan, ko‘rgazmali va o‘yinli usullarni qo‘llash muhim. Qo‘shiqlar, multfilmlar, texnologiyalar va o‘qituvchining individual yondashuvi orqali bola nutqni faollashtiradi. O‘z nutqini eshitish, xatolarini tahlil qilish va ularni mustaqil tuzatish bola o‘z-o‘zini o‘rgatuvchi subyekt sifatida shakllanishiga zamin yaratadi. Demak, boshlang‘ich bosqichda to‘g‘ri tashkil etilgan talaffuz mashg‘ulotlari nafaqat til o‘rganishga bo‘lgan ishtiyoqni uyg‘otadi, balki mustahkam bilim, puxta ko‘nikma va ijobiy munosabat asosida shakllanadi.

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ECONOMETRIC MODELING OF RETAIL DEVELOPMENT TRENDS (ON THE EXAMPLE OF SURKHANDARYA REGION)

Abstract: *this paper analyzes the econometric modeling of retail growth patterns in the Surkhandarya region. Based on various statistical techniques and data analysis, we analyze the determinants of retail expansion and consumer behavior in this underresearched area. From our research, we conclude that demographic conditions, economic stability, and infrastructure development are key determinants of retail success. The findings attempt to provide policymakers and stakeholders with insights to improve retail expansion, thus regional economic growth.*

Keywords: *econometric modeling, retail development, Surkhandarya region, consumer behavior, economic growth.*

Introduction. The growth of retail is essential to economic development and living standards in any region. In the Surkhandarya region, with its unique demographic and economic situation, retail trends are the most important factor in targeted policy and strategic investment. The work aims to identify the patterns in retail growth development in Surkhandarya with econometric models that capture interactions between various forces of influence. By analyzing population statistics, personal income, as well as localized market conditions, we aim to establish the significant drivers of growth in the retail sector. That the findings shall inform local policymakers and businesses of their decisions leading to enhanced improvement in the country's retail activities.

Main part (discussion and results). Today, much attention is paid to the development of trade networks. As a trade network, retail trade is one of the most developed areas. In fact, this trade is a result of trade and differs from other trade. Retail trade is the process of selling goods and services directly to consumers through various channels, such as stores, online platforms or mobile applications. It includes a complex network of actions, including searching for products from manufacturers or suppliers, storing them in warehouses, displaying them in stores and selling them to consumers. Scientific research has been conducted by foreign and domestic researchers on the development of retail trade. In particular, D. Fernichev studied the issues of improving the culture of customer service through the development of electronic commerce in retail enterprises.[1] V. Snigereva studied the issues of improving sales service through the management of the assortment of

[1] Джон Ферни и др. Принципы розничной торговли. Пер. с англ. Сапциной У.–М.: ЗАО «Олимп –Бизнес», 2008. –416 с.

goods.[2] S. Sysoeva also studied the basic and additional sales services provided to customers in the process of selling goods in her research work.[3]

The Surkhandarya region, which lies in the south of Uzbekistan, has undergone significant economic change over the last few years as well. Being primarily an agrarian area, it is gradually embracing modernization and diversification, particularly in the retail trade. The retail expansion is at the heart of economic progress, influencing not only the job situation within the vicinity but also spending habits and lifestyles among citizens. This study aims to determine the trends in retail growth in the Surkhandarya region through econometric modeling to provide insights that can be used in policy making and investment decision making. Econometric modeling is a powerful analytical tool employed to describe and analyze the relationship between various economic variables quantitatively, and thus enable researchers to derive meaningful conclusions from raw data. For retail expansion, levels of income, population, infrastructure quality, and customer tastes need to be considered. Applying econometric models on these variables allows retail trends and their determinants to be examined in more detail, particularly for markets previously underserved by previous studies.

The first thing in this analysis is to gather relevant information about retail stores, consumer spending, and socioeconomic conditions in the Surkhandarya province. Data sources would be national statistical offices, local government reports, and retail business and consumer surveys. Collecting such information gives a general idea of the retail scenario in the region to facilitate modeling based on more realistic patterns. Population demographic structure is among the crucial retail development factors. Surkhandarya stands out for its young population with a high proportion of working-age individuals. This demographic context is applicable to retail development since youth will have diverse shopping tastes and budgets. By incorporating demographic variables in our econometric model, we can identify the impact of these variables on consumer behavior and retail performance and thereby provide insights into future market demands.

Economic conditions also play a vital role in retail development. Surkhandarya, like most regions, is subjected to issues such as varying income levels and employment. By studying economic indicators such as GDP growth, levels of unemployment, and average income levels, we can make comparisons between economic well-being and retail performance. Understanding these comparisons will assist in identifying potential barriers to retail development and creating strategies to mitigate them. Infrastructure improvement is another factor that should not be overlooked. Poor transport and logistics can drastically impair retail operations, which in turn affect product availability and price. Surkhandarya is going through a stage of infrastructural development, with funds allocated to road improvement, public transport, and logistical hubs. An econometric model that captures infrastructure quality will enable us to evaluate how this improvement

[2] Снегирева В. Розничный магазин. Управление ассортиментом по товарным категориям. –СПб.: Питер, 2005. –416 с.
[3] СысоеваС.В., Крок Г.Г. Большая книга директора магазина. –СПб.: Питер, 2009. -432 с.

contributes positively to the growth of retail, thus serving as a model for future investments in infrastructure.[4]

Besides, consumer behavior is influenced by geographical and cultural factors unique to Surkhandarya. There is a need for the retailers to modify strategies in terms of catering to local tastes, preferences, and shopping habits. Through econometric analysis, we can analyze patterns in consumer expenditure and taste, and retailers can develop targeted marketing strategies that attract the local consumer. This also calls for market segmentation and consumer needs identification across segments. Once the econometric models have been constructed, the results can be utilized to inform action by policymakers and businesses.[5] For instance, if it is revealed that retail growth largely depends on incomes, policymakers may accord top priority to economic initiatives aimed at enhancing disposable income of the residents. Likewise, retailers can utilize such results to inform their business strategies, such as product mix, prices, and promotions. The findings of this study have implications not only for the Surkhandarya region but also for similar economies in transition within their retail sectors. Learning what is occurring can help other areas construct sound retail strategies and leverage new opportunities. As retail continues to evolve as a result of globalization, local knowledge created through econometric modeling can be a competitive advantage. Overall, the econometric modeling of retail development trends in the Surkhandarya region suggests the intricate interplay between various economic, demographic, and infrastructural variables. With the application of econometric techniques, we can have a balanced perspective of the retail situation and help policymakers and retailers take well-informed decisions. As the region marches ahead on the path of economic growth, utilizing data-based insights will be of utmost concern for ensuring sustainable and inclusive retail growth. Retail trade is considered an entrepreneurial activity related to the sale of goods and services directly to final consumers and intended for personal or family use. Through this trade, the process of exchanging goods is also carried out, aimed at satisfying the needs of people through the free sale of goods and services that are valuable to them. Accordingly, assessing the dynamics of the development of the retail trade sector in turn requires an analysis of the trends in the development of retail trade in Uzbekistan. This issue is also reflected in the Development Strategy of New Uzbekistan for 2022-2026 adopted in our country. The trend of change is represented by retail trade turnover, which is based on indicators such as sales volume in all trade sectors, the volume of food and non-food goods in the total volume of this trade turnover, retail trade turnover per capita, and commodity stocks in retail trade sectors, the number of retail outlets and catering establishments.

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Conclusion. In summary, this article refers to the importance of econometric modeling in determining retail development patterns in the Surkhandarya region. The research highlights the authoritative role of demographic and economic factors in the determination of consumer behavior and retail performance. Policymakers and industry stakeholders find our findings useful, which shows that targeted interventions can stimulate retail growth. In the future, it is recommended that more research be carried out to stay in touch with such trends and sharpen strategies to an evolving retail landscape.

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RESEARCH ON NITRIDING OF SHOE SEWING MACHINE NEEDLES USING ELECTRON BEAM IN VACUUM ENVIRONMENT

Annotation. *In the article the results of studies of the influence of gas pressure and displacement potential on the process of electron beam nitriding of titanium in the vacuum pressure region are presented. The results of measurements are presented and a correlation is revealed between the mass-charge composition of the beam plasma and the parameters and characteristics of the nitrided surface.*

Key words: *vacuum, plasma cathode, electron sources, electron beams, plasma nitriding, steel, carbon, nitrogen, hardness, processing.*

Introduction: Sewing needles are made of specially hardened needle wire, the material for which is high-quality U9A steel. After heat treatment, the needle should have a hardness of HRC 54-60. The surface smoothness of the needle should not be lower than 10.

Nitriding of metals is a method of improving the performance properties of structural materials. There are three main types of nitriding: gas nitriding [1], liquid nitriding in salt solutions [2] and plasma nitriding [3].

Among these types of nitriding, plasma nitriding is distinguished by a short technological process time, no environmental pollution, low gas and energy consumption [4], which leads to the widespread use of plasma nitriding to improve hardness, corrosion resistance and reduce surface friction. [5].

Research and its methodology: The pressure of the argon-nitrogen mixture and the accelerating voltage of the beam were 0.1-1 Pa and one hundred volts, respectively. It was also possible to achieve strengthening of the surface layers of the samples, which was primarily due to the presence of atomic nitrogen near the workpiece, since the technological mode of nitriding is carried out at electron beam voltages at maximum dissociation of nitrogen molecules under electron influence (60-140 eV).

The use of vacuum sources for nitriding products has significant advantages - the ability to independently regulate the current, radiation energy and gas pressure allows you to provide the necessary temperature conditions of the nitrided product and create a dense plasma without the use of additional devices, [6].

Thus, the purpose of this work was to study the possibility of nitriding steel in the electron beam plasma of a vacuum electron source during direct irradiation of a steel sample with an electron beam, as well as to characterize the formed modified surface layer. Studies were carried out on the mass-charge composition of the beam plasma ions, tribological properties, microhardness, X-ray diffraction and elemental analysis of the nitrided surface.

Since the hardening of the steel surface is associated with the presence of nitrogen atoms near the processed sample, studies were conducted on the mass-

charge composition of the beam plasma ions to find the optimal parameters of the electron beam during nitriding. The study of the mass-charge composition of the plasma ions was carried out using a modernized RGA-100 quadrupole residual atmosphere analyzer near the area of subsequent placement of the nitrided sample.

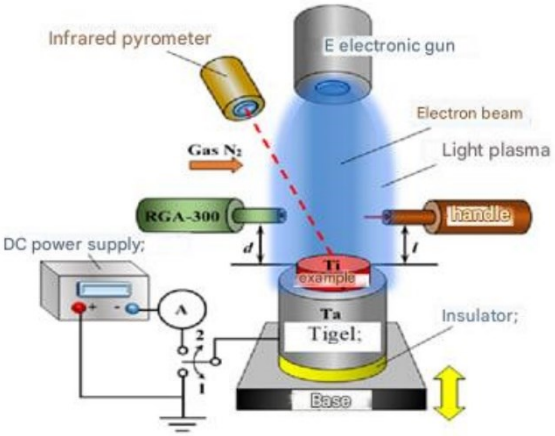

Figure 1 – Experimental scheme:

Sample. As a sample, we used 4 mm thick U9A steel, from which an element of 10×10 mm was cut. The side of the sample exposed to the electron beam was polished using abrasive paper and then wiped with ethyl alcohol before being placed in a vacuum chamber. The sample was placed on a tantalum crucible and a continuous electron beam with an energy of 4-9 kV, a current of 100 mA and a length of 20-25 mm was generated by a vacuum plasma source based on a hollow cathode discharge. The generated electron beam falls on the titanium sample and is used to heat it. [7].

Using an RGA300 turbomolecular pump with a pumping speed of 300 l/s, the air inside the working chamber was sucked in to a pressure of 0.03 Pa, after which nitrogen was pumped into the chamber to the required working gas pressure of 1–7 Pa. However, in this experiment, to ensure sufficient temperature for nitriding, the accelerating voltage was increased to 6 kV and the sample temperature reached 900 ˚C.

The elemental composition of the nitriding layer was determined using scanning electron spectrometry (Figure 3).

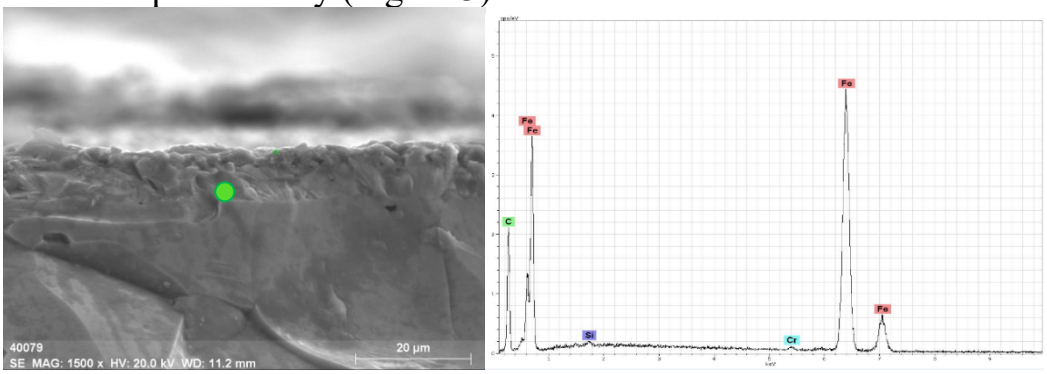

Figure 2 - Auger spectroscopy results.

The main elements are steel and nitrogen, but oxygen and a small amount of carbon are also present, but the sum of the concentrations of the last two elements does not exceed 6.2 wt.%. The small amount of oxygen and carbon in the nitrided layer is associated with their content in the layer near the surface of the steel, such an amount does not lead to the destruction of the nitrogen layers. When the duration of the nitriding process was 75 minutes, the thickness of the nitrided layer was approximately 8 μm.

At the same time, a small amount of oxide phase corresponding to Fe3 was detected (Figure 3). From the small percentage of oxide phases it follows that the oxide layer has a small thickness and occupies an insignificant volume fraction of the volume of the studied sample and is associated with its presence on the original surface. The data of X-ray diffraction analysis fully confirm the data of the scanning electron microscope.

These indicators allow to increase the service life of steel nitrided by electron beams in a medium vacuum environment. It is noteworthy that the hardness of the nitrided layer increased almost 3 times compared to the initial surface (Fig. 3).

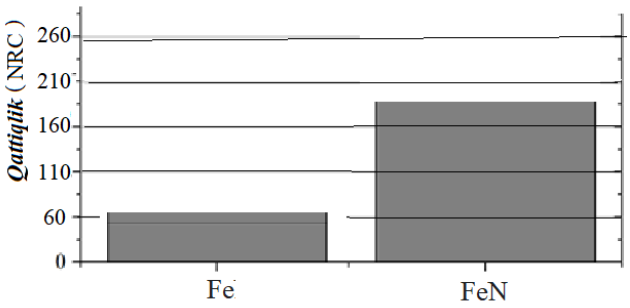

Fig. 3 - Hardness of the initial and nitrided sample.

Conclusion

It was shown that it is possible to nitride steel in an electron beam plasma with direct irradiation of electron beams from a vacuum electron source. The light spectra of the nitrided layer sample indicate that it contains the main amount of steel and nitrogen, with small traces of carbon and oxygen.

The study of the hardness and tribological properties of the surface layers showed a low friction coefficient compared to steel and a several-fold increase in the resistance and hardness of the nitrided layer. The results obtained indicate the advantage of using vacuum sources for nitriding products based on beam-plasma.

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GENERAL TRENDS OF CLIMATE CHANGE IN CENTRAL ASIA IN THE PLEISTOCENE-HOLOCENE

Abstract: *The article presents data on changes in climatic conditions during the Pleistocene-Holocene based on paleosoil and paleobotanical studies. The obtained results indicate the presence of repeated measurements of climate both in the flat territories of Central Asia and in the mountainous regions over a geological period of time.*

Key words: *global climate change, intracontinental basins, loess and loess-like rocks, Holocene, Pleistocene.*

Introduction. For the geological history of the Earth, the existence of fluctuations in climate is a proven fact. However, there is still no definitive opinion regarding the causes of such a phenomenon. Nevertheless, the current global climate change has attracted increasing interest in this problem recently [1,2,7].

The study of the history of the development of complex physico-geographical conditions for the formation of paleolandscapes of mountain, foothill, and plain territories of intracontinental basins is of great theoretical and practical interest. For this reason, for the past 100 years, one of the pressing issues of paleogeography has remained the determination of the presence and dynamics of climate change within Central Asia.

Research materials and methods. Based on literary sources, personal data, and using paleogeographical, archaeological, and paleobotanical research methods, the existence of Pleistocene-Holocene climate changes within Central Asia has been substantiated.

Comprehensive paleogeographical research in our region began with the works of I.V.Mushketov [7], L.S.Berg [1], K.K.Markov [6] and others, based mainly on the analysis of fluctuations in the level of the region's large water basins. The main indicators in the analysis of climatic changes in the plains of Central Asia were the fluctuations in the level of the Aral Sea, as well as the transgressions and regressions of the Caspian Sea.

In the mountainous and foothill regions of Central Asia, much information was obtained based on the analysis of neotectonic movements of the Quaternary period by Yu.A. Skvorsov [8], moraine deposits by M.M. Mamatkulov [5] and others. In recent years, great successes have been achieved in reconstructing paleoclimatic conditions, as well as in studying the composition and structure of rocks. In this regard, the widely distributed loess and loess-like rocks with buried

soil horizons within Central Asia proved to be particularly informative. The study of loess layers with a thickness of up to 30-40 meters shows that during the cycles of intensive sedimentation, there were periods of relative stabilization and rest, which allowed for the formation of soil horizons with a thickness of 2 to 4 meters, allowing them to be identified as the only ***visual marking*** horizons in loess deposits. Furthermore, fossil soils, as natural systems, record in their profile various states of past ecosystems, allowing for the restoration of soil formation processes and the identification of morpho-typical features characteristic of each paleo-soil based on their degree of preservation and a set of stable traits.

N.O.Kovaleva [3] notes that the informational function of soils has been repeatedly demonstrated in the stratification of loess deposits, reconstruction of the natural environment of various regions, and explanation of historical events, therefore, the widespread use of paleopedological methods in paleogeographical reconstructions yields good results. The theoretical concept of soil memory, developed by V.O.Targulyan and I.A.Sokolov [10], allows for the use of soil properties for paleoclimatic reconstructions. At the same time, the possibility of reading information from various media of soil memory: carbonate neoplasms, gross chemical elements of soils, magnetic minerals, spore-pollen composition of buried soils, and other soil properties has been well substantiated.

Research results and discussion. As confirmation of the above, it can be noted that as a result of many years of research of loess layers in different parts of Central Asia, it was revealed that they consist of clearly expressed horizons of buried soils and separating them by loess-like loams. The paleozoic soils of loess horizons morphologically differ from the lower and upper horizons in their dark brown (to brown) color, density of composition, presence of characteristic structural clumps, and inclusion of carbonate concretions of elongated-circular shape with a diameter of 4-6 cm and length up to 15 cm. It should be noted here that, according to soil scientists' understanding, carbonate and clay-carbonate concretions are new formations of modern soil formation and are located at depths up to 4-5 meters [4]. Thus, the carbonate concretions of the lesso-soil complexes, located floors above each other, are the products of soil formation of a specific horizon of the paleopoch. Concretion sizes decrease from bottom to top, from ancient layers to younger ones. In the same direction, the decrease in the size of mollusks is also occurring, which probably indicates a trend towards climate change towards aridization. In the micromorphological structure of this age group of paleochrops, signs of increased hydromorphicity are observed in the form of clay-iron and carbonate microconcretions, sections of streamed-oriented clays (polinite). The presence of lighter-colored loams between paleozoic soils with unoxidized minerals of the magnetite-ilmenite and hematite-limonite groups indicates that the formation of loess horizons occurred during relatively cool and dry climates. The study of loess layers with a thickness of up to 30-40 meters shows that during the cycles of intensive sedimentation, there were periods of relative stabilization and rest, which allowed for the formation of soil horizons with a thickness of 2 to 4 meters, allowing them to be identified as the only visual marking horizons in loess deposits.

The cultural horizons of numerous Paleolithic sites in Central Asia also testify to changes in paleogeographical conditions. In particular, for the Early Holocene deposits of Southern Fergana, palinological data revealed the dominance of wormwood- diverse herbaceous communities with abundance of representatives of the diverse herbaceous families *Rosaceae, Leguminosae, Polygonaceae, Cruciferae, as well as Liliaceae, Plantaginaceae, Labiana, Cruciferae, Ranunculaceae, Scrophulariaceae, Dipsacaeae, Caryophyllaceae, Geraniaceaen* and other species. In individual spectra, the pollen of the hydrophytes *Butomaceae, Alismataceaen,* etc. was found. Cereals, complex-flowered plants, and aquatic plants such as *Typha, Potamogeton, Altsmataceae, Butomaceae,* etc., were found consistently, but in small quantities. Single finds of *Juniperus, Pinus, and Betula* wood species were noted. The results of radiocarbon dating of early Holocene sediment samples from the Karkidon section determined their age to be 8,525 thousand years. [9].

The Middle Holocene of the foothill wavy plains zone is characterized by the distribution of diverse grasses and cereal communities. In addition to the pollen of cereals, which are present in large quantities in the sediments of the upper part of the section, the pollen of Leguminosae, Saxifragaceae, Caryophyllaceae is present in the pollen of various herbs. Straw and wormwood pollen are found in small quantities, while the pollen of other complex-flowered plants and ephedra is quite significant. Radiocarbon dating allows us to attribute the time of formation of the lithological deposits of the horizon to the middle stage of the Holocene climate optimum, 5,680 thousand years ago [9].

Thus, in the early Holocene, there is a relatively dry stage between 10 and 7.5 thousand years ago, characterized by the predominance of reed communities, which currently play a dominant role in the main landscapes of the plains of semi-deserts and deserts.

The average Holocene between 7.5 and 5 thousand years ago is characterized by increased dryness of the climate and xerophytization of vegetation. Based on the generalization of the results of spore-pollen and lithological-facial studies, the chronostratigraphic stage of the late Holocene, encompassing a time interval of 5 - 4.5 thousand years ago, has been determined [9].

Conclusion. The material collected in various parts of Central Asia allows us to assert that throughout the entire Pleistocene-Holocene, against a backdrop of increasing contrast and aridization, the main patterns in the alternation of dry and more humid periods, fluctuations in the climatic conditions of Central Asia occurred. However, the cyclical nature and sequence of climatic changes from the Pleistocene to the Holocene repeat within a shorter timeframe. Therefore, a more detailed, comprehensive study of Holocene deposits, against the backdrop of modern climate change, must be considered in the medium-term forecasting of regional development.

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PROBLEMS AND SOLUTIONS IN PROVIDING ELECTRICITY FOR THE USE OF WATER PUMPS ON IRRIGATED LANDS IN ANDIZHAN REGION

Abstract: *The article examines the existing problems in ensuring reliable power supply for water pumps used in the irrigated lands of the Andijan region. The main factors influencing power supply interruptions are identified and solutions are proposed. The prospects for the introduction of alternative energy sources and increasing the energy efficiency of water pumping units are also discussed.*

Key words: *electricity supply, water pumps, irrigated lands, Andijan region, energy saving, alternative energy sources*

Introduction

Irrigated agriculture plays an important role in the agriculture of the Andijan region. The main element of irrigation is water pumps, the operation of which directly depends on a stable power supply. Recently, there have been more frequent cases of power outages, which negatively affects crop yields and the economy of farms.

Problems

1. Instability of power supply

Andijan region, like other agricultural regions, faces unstable power supply, especially during peak load periods - in spring and summer, when irrigation equipment is intensively used. The main manifestations of instability:

-Frequent shutdowns: emergency and planned shutdowns lead to pump downtime, disrupting the irrigation schedule.

-Power surges: a drop in voltage can lead to incorrect operation of pumping equipment, its overheating and failure.

-Network overload: due to the fact that several farms can be connected to one line, the total load increases, causing a drop in the quality of power supply.

This directly affects the reliability of irrigation processes, and also increases equipment wear [1].

2. Deterioration of infrastructure

Most of the existing energy infrastructure in agricultural areas was built during the Soviet period. Today:

-Old cable lines have a high level of insulation losses and often require repair.

-Transformer substations do not meet modern loads, overheat, and protection is triggered, causing shutdowns.

-The lack of automated monitoring and control systems makes it difficult to quickly respond to emergency situations [3].

Such deterioration reduces the efficiency of electricity supply and increases the frequency of accidents.

3. Lack of backup power sources

Many farms do not have alternative or backup power sources. In the event of a power outage:

-Pumps stop working completely, which leads to drying out of fields and loss of crops during hot periods.

-Restarting pumps after failures may require manual intervention and time, especially if the site is located far from a populated area.

-There are also no energy storage systems (batteries, UPS) that could support the operation of equipment at least for a while [2].

4. High energy costs

The irrigation season coincides with the summer peak energy consumption, when tariffs are especially high. The problem is aggravated by the following factors:

-Unregulated use of pumps that operate around the clock even with inefficient water supply.

-Electricity tariffs for farmers are often close to industrial ones, without taking into account the specifics of agriculture.

-Absence of differentiated tariffs that encourage economical consumption [4].

High costs reduce the profitability of farm labor and limit the development of new agricultural projects.

5. Low energy efficiency of pumps

Many farms still use outdated pumping units. The main disadvantages are:

-High energy consumption per unit of pumped water.

-Lack of automation and control systems - pumps operate at full capacity regardless of needs.

-Physical wear and tear of equipment reduces its productivity and increases maintenance costs.

-Low efficiency (coefficient of performance) leads to overspending of resources [2].

Transition to modern energy-efficient models requires investments that are unavailable to many farms without government support or subsidies.

Comparative analysis of problems of power supply of water pumps in Andijan region

№	Problem	Current situation in Andijan region	Consequences for agriculture
1	Unstable power supply	Frequent power outages, power surges, network overloads	Violation of the watering schedule, reduction in yield

2	Deterioration of infrastructure	Old cable network and transformer substations	Increased risk of accidents, increased equipment downtime
3	Lack of backup power sources	Lack of backup power sources	Complete stop of pumps during power outage
4	High energy costs	High energy costs	Increase in production costs, decrease in farmers' profits
5	Low energy efficiency of pumps	Use of outdated equipment with low efficiency	Excessive energy consumption, increased operating costs

Specific examples from Andijan region

1. Markhamat district: In 2022, the district experienced frequent power outages, especially during the growing season. This resulted in a 15% decrease in cotton yield compared to the previous year.

2. Izbaskent district: Due to the deterioration of transformer substations, there were regular power surges, which led to the failure of pumping equipment and an increase in the cost of its repair.

3. Khodjabad district: The lack of backup power sources led to a complete stop of pumps during power outages, which negatively affected the timeliness of irrigation of agricultural crops.

Proposed solutions

1. Modernization of power grids and substations

Goal: Increasing the reliability of power supply to pumping stations.

Activities:

-Replacement of outdated cable lines (especially aluminum with copper) to reduce energy losses and increase reliability.

-Modernization of transformers - installation of new energy-efficient models with the ability to regulate voltage.

-Automation of control systems - introduction of remote monitoring and circuit breakers that respond to overloads and emergency situations.

-Example: In 2023, 12 km of power grids were replaced in the Boston district, which reduced emergency shutdowns by 35%.

2. Implementation of alternative energy sources

Goal: Reducing dependence on centralized power supply.

Activities:

-Installation of solar panels at pumping stations, especially in areas remote from power lines [1].

-Hybrid installations (solar panels + diesel generator) for round-the-clock power supply.

-Creation of mini-stations on biomass or wind in farms.

-Example: In 2024, a 15 kW solar installation was installed at one of the pumping stations in the Izbaskent district, which covers up to 40% of daily energy consumption.

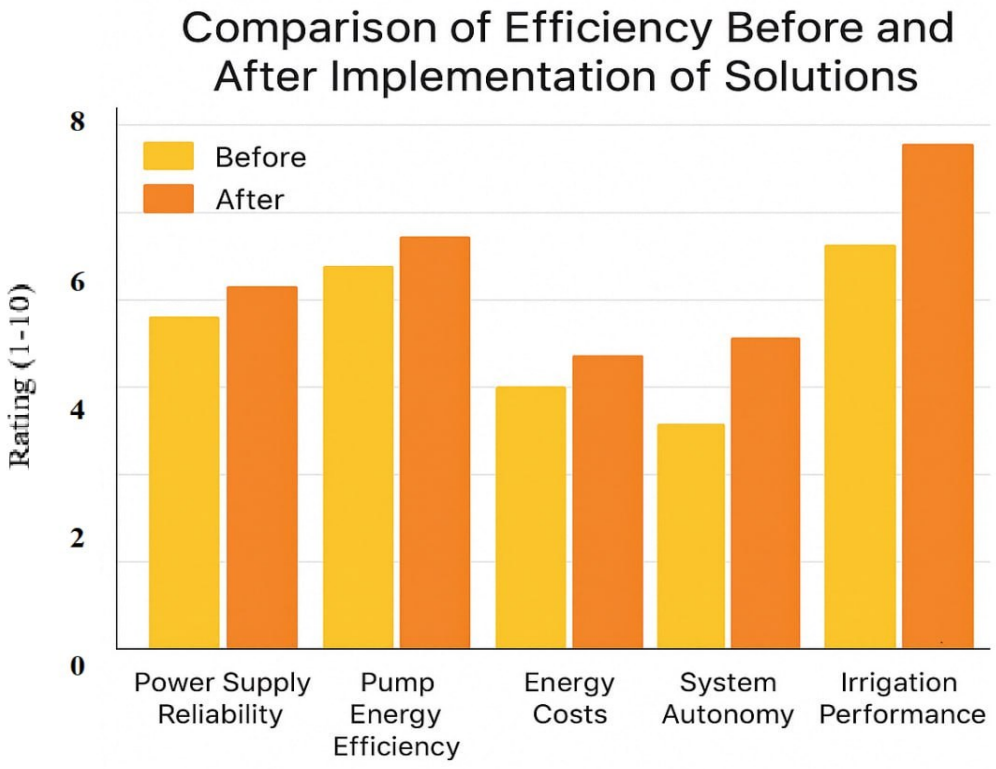
3. Creation of local energy systems

Goal: Increasing the autonomy and sustainability of rural energy.

Activities:

-Construction of micro hydroelectric power plants on small irrigation canals and reservoirs (for example, on the Khodjaabad canal).

-Placement of mini-substations closer to farms to distribute the load.



-Example: As part of a pilot project in the Khanabad Valley, a 25 kW micro hydroelectric power plant was installed, providing electricity to 3 pumping stations.

4. Use of energy-efficient equipment

Goal: Reduce energy consumption during operation of pumps.

Activities:

-Replacement of old pumps with modern models with high efficiency and variable frequency drive (VFD).

-Installation of pressure and water flow sensors, allowing to adapt the operation of pumps to real conditions.

-Automation of pumping stations for optimal operation (for example, night irrigation at a low tariff).

-Example: After installing pumps with VFD in the Markhamat district, electricity costs decreased by 28%.

5. State support

Goal: To encourage farmers to modernize and reduce energy costs.

Activities:

-Allocation of subsidies for the purchase of solar panels, new pumps and electrical equipment.

-Preferential lending for energy efficiency projects.

-Reduction of electricity tariffs during the agricultural season.

-Example: In 2023, within the framework of the state program “Energy of the Future”, 52 farms in the Andijan region received partial financing for the modernization of pumping units [4].

Table: Projected energy and cost savings after retrofit

№	Event	Before implementation	After implementation	Saving
1	Energy consumption of the pumping station	50,000 kWh/year	35,000 kWh/year	↓ 30% (15,000 kWh)
2	Cost of electricity	50 million soum/year	year 35 million soum/year	↓15 million soum
3	Downtime due to outages	120 h/season	35 h/season	↓ 85 hours
4	Crop losses due to irrigation failure	10–15%	<3%	Increase by 10-12%
5	Equipment service life	5-6 years	10+ years	+4 years

Links to government programs and regulations

1. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 222 dated April 26, 2022

"On additional measures for the comprehensive socio-economic development of territories and improving the standard of living of the population of the Andijan region in 2022-2026"

https://lex.uz/docs/5978422

2. The "Yosh farmer" (Young farmer) program - support for young farmers with subsidies for the purchase of machinery and equipment.

3. National Strategy for Energy Efficiency 2030

Includes measures to support the introduction of renewable energy sources (including in the agricultural sector):

https://minenergy.uz/ru/lists/view/380

4. Resolution of the President of the Republic of Uzbekistan PP-4709 dated May 26, 2020

"On measures for the further development of renewable energy and improving energy efficiency"

Discussion

Ensuring reliable power supply for water pumps requires a comprehensive approach. Particular attention should be paid to resistance to climatic and man-made loads. Integration of renewable energy sources (RES) will partially relieve the

central network and increase the autonomy of irrigation systems. It is also important to educate farmers on energy saving and maintenance of pumping equipment.

Conclusion

The solution to the problems with the power supply of water pumps in the Andijan region is possible only with the joint efforts of the state, energy companies and farmers. The transition to energy-efficient and renewable technologies will help improve the stability of irrigation systems and ensure sustainable development of agriculture in the region.

Irrigation infrastructure scheme in Andijan region

Source: Abdurakhmanov S.U., Azizov B.Yo. Water resources of the Andijan region for the development of renewable energy sources based on small hydroelectric power plants // Modern scientific research and innovation. 2022. No. 10. The diagram shows the main canals, reservoirs and planned construction sites for small hydroelectric power plants, which indicates the potential of the region in the development of renewable energy sources and improving electricity supply for irrigation needs.

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ZUBTURUM (PLANTAGO MAJOR) O‘SIMLIGI BARGLARINING DORIVOR AHAMIYATI

Annotatsiya: *Mazkur maqolada dorivor o‘simliklar ichida keng tarqalgan katta zubturum (Plantago major) o‘simligining morfologik xususiyatlari, barglarining tarkibiy moddalari, ularning dorivor ahamiyati, xalq tabobatida va rasmiy tibbiyotda qo‘llanilishi haqida ma’lumotlar keltirilgan. Shuningdek, bu o‘simlikdan tayyorlanadigan damlamalar, siroplar va boshqa vositalarning ateroskleroz, bavosir, me’da-ichak kasalliklari kabi muhim kasalliklarni davolashdagi o‘rni yoritilgan.*

Kalit so‘zlar: *zubturum, dorivor o‘simlik, xalq tabobati, damlama, ateroskleroz, bavosir, fitoterapiya.*

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THE MEDICINAL VALUE OF THE LEAVES OF THE ZUBTURUM PLANT (PLANTAIN LARGE)

Abstract: *This article provides information on the morphological features of the plant plantain large (Plantago Major), widely distributed among medicinal plants, the constituents of its leaves, their medicinal value, and their use in folk and official medicine. The role of decoctions, syrups and other remedies made from this plant in the treatment of important diseases such as atherosclerosis, liver failure, and gastrointestinal disorders is also highlighted.*

Keywords: *Dentate, medicinal plant, traditional medicine, tincture, atherosclerosis, bavazir, phytotherapy.*

Kirish.

Tabiatda mavjud bo‘lgan ko‘plab o‘simliklar orasida zubturum qadim zamonlardan beri shifobaxsh xususiyatlari bilan mashhurdir. Xususan, Abu Ali ibn Sino o‘zining “Tib qonunlari” asarida zubturumning dorivor jihatlarini alohida ta’kidlagan. Hozirgi kunda ham zubturum barglari xalq tabobati va rasmiy tibbiyotda keng qo‘llanilmoqda. O‘simlikka bo‘lgan ilmiy qiziqish uning boy kimyoviy tarkibi va keng ta’sir doirasi bilan izohlanadi. Bugungi kunda turli laboratoriya tadqiqotlari natijasida zubturumning antibakterial, yallig‘lanishga qarshi, antioksidant va tinchlantiruvchi xususiyatlari isbotlangan.

O‘simlikning botanik tavsifi.

Zubturum (Plantago major) – Plantaginaceae oilasiga mansub ko‘p yillik o‘simlik bo‘lib, o‘rtacha 10–50 sm balandlikka ega. Barglari keng ellipssimon, uzun bandli, yoysimon tomirli bo‘lib, yerga yastanib o‘sadi. Gullari mayda, 4 bo‘lakli, boshoqsimon to‘pgullarda joylashgan. Mevasi tuxumsimon, ko‘p urug‘li ko‘sakcha. Gullash davri – iyun-sentabr. Dehqonchilik yerlari, yoqalar, botqoqliklar, o‘rmon chetlari kabi joylarda uchraydi. Uning ildiz tizimi yaxshi rivojlangan bo‘lib, tuproqning ustki qatlamida joylashgan. O‘simlikning yuqori moslashuvchanligi tufayli u har xil ekologik sharoitlarda ham yaxshi o‘sadi.

Kimyoviy tarkibi va farmakologik xususiyatlari.

Zubturum barglari quyidagi moddalarga boy:

1. Glikozid akubin
2. Flavonoidlar
3. Vitamin C, K va karotin
4. Efir moylari (0.1% gacha)
5. Shilliq moddalar, saponinlar
6. Organik kislotalar

Zubturum (Plantago major) o‘simligi.

Bu moddalar zubturumga yallig‘lanishga qarshi, antiseptik, antispazmodik, antiviral, tinchlantiruvchi, mikroblarga qarshi va balg‘am ko‘chiruvchi xususiyatlar bag‘ishlaydi. Ushbu tarkibiy qismlar zubturumni nafaqat simptomatik, balki etiologik davolash vositasi sifatida ham qo‘llash imkonini beradi. Masalan, akubin glikozidi oshqozon shilliq qavatini tiklashda muhim rol o‘ynaydi. Tadqiqotlar ko‘rsatadiki, bu o‘simlikning biologik faol komponentlari uni nafaqat profilaktik, balki davolovchi vosita sifatida ham qo‘llash imkonini beradi. Kelajakda zubturum asosida yangi farmatsevtik preparatlar ishlab chiqish uchun ilmiy izlanishlar davom etmoqda.

Tibbiyotda qo‘llanilishi.

Zubturum barglaridan tayyorlangan dorivor vositalar:
- Damlamalar – me’da-ichak kasalliklari, bronxit, astma, yo‘tal va bavosirda ishlatiladi.
- Sharbati – yaralar, kolit, nafas yo‘llari kasalliklarida foydali.
- Malham va siroplar – kosmetologiya va pediatriyada qo‘llaniladi.
- Plantaglitsid preparati – gastrit, enterokolit, yara kasalliklari uchun tavsiya etiladi.

Tibbiyot amaliyotida ushbu o‘simlik asosida yaratilgan fitopreparatlar ayniqsa pediatriya va geriatrik kasalliklar profilaktikasi va davosida keng qo‘llaniladi. Bu vositalar organizmning umumiy qarshiligini oshiradi. Tadqiqotlar ko‘rsatadiki, bu o‘simlikning biologik faol komponentlari uni nafaqat profilaktik, balki davolovchi vosita sifatida ham qo‘llash imkonini beradi. Kelajakda zubturum asosida yangi farmatsevtik preparatlar ishlab chiqish uchun ilmiy izlanishlar davom etmoqda.

Xalq tabobatida qo‘llanilishi.

Zubturum xalq tabobatida ko‘plab kasalliklar uchun ishlatilgan, jumladan:
- Ateroskleroz – barg damlamasi yoki asal bilan qaynatilgan sharbati ichiladi.
- Bavosir – barg va ildizlaridan tayyorlangan damlamalar, qaynatmalar ishlatiladi.
- Yaralar va kuyishlar – tashqi qo‘llaniladigan kompress sifatida.
- Ko‘z, jigar, buyrak muammolari – barg shirasi yoki damlamalari yordamida.

Bundan tashqari, uning barglari bilan tayyorlangan kompresslar yara bitishini tezlashtiradi va teri yangilanishiga yordam beradi. Zubturumning og‘riq qoldiruvchi va shamollashga qarshi xususiyatlari sababli u ko‘pincha o‘pka kasalliklarida ishlatilgan.

Xulosa: Zubturum barglari qadimdan xalq tabobatida muhim o‘rin tutgan va zamonaviy tibbiyotda ham dorivor vosita sifatida e’tirof etilgan. Uning biologik faol moddalarga boyligi uni ko‘plab kasalliklarni davolashda samarali vosita sifatida qo‘llash imkonini beradi. Tadqiqotlar ko‘rsatadiki, bu o‘simlikning biologik faol komponentlari uni nafaqat profilaktik, balki davolovchi vosita sifatida ham qo‘llash imkonini beradi. Kelajakda zubturum asosida yangi farmatsevtik preparatlar ishlab chiqish uchun ilmiy izlanishlar davom etmoqda.

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KEKSA YOSHDAGI BEMORLARDA SPINAL ANESTEZIYA OSTIDA O'TKAZILGAN TRANSURETRAL REZEKSIYA TASHRIXI DAVRIDA GEMONIKANI QIYOSIY TAQQOSLASHNI O'RGANISH

Hozirgi vaqtda epidural anesteziya (EA) va o'murtqa anesteziya (SA) ochiq va endoskopik jarrohlik aralashuvlarda, shu jumladan transuretral (TU) aralashuvlarda keng qo'llaniladi [1, 8, 20]. Ma'lumki, TU operatsiyalarining muhim qismi keksa va keksa odamlarda amalga oshiriladi. Shu bilan birga, gerontologik bemorlarda EA va SA dan foydalanish, birinchi navbatda, qon aylanishi holatiga behushlik omillarining ta'siridan kelib chiqqan bir qator xususiyatlarga ega [9, 10, 17, 18]. Yuqoridagilarni hisobga olgan holda, ushbu ishning maqsadi keksa va keksa bemorlarda TU aralashuvi paytida EA va SA ning gemodinamik parametrlarga ta'sirini qiyosiy o'rganish edi.

Materiallar va usullar. Anesteziya va jarrohlik bosqichlarida gemodinamik ko'rsatkichlarning o'zgarishi 67 yoshdan 86 yoshgacha bo'lgan 49 bemorda o'rganildi. Tekshirilgan bemorlar orasida 44 nafar (89,8%) erkaklar bor.

5 nafar ayol (10,2%). Bemorlarga turli xil TU aralashuvlari o'tkazildi, ularning xarakteristikalari 1-jadvalda keltirilgan. TU aralashuvini amalga oshirishda transuretral rezektsiya (TUR), transuretral bug'lanish (TUV) va transuretral litotripsiya usullari qo'llanilgan. TU aralashuvlari Siemens qurilmalari yordamida amalga oshirildi.

1-jadvalda ko'rsatilganidek, biz tekshirgan bemorlar aralashuvlar davomida qo'llaniladigan behushlik usuliga qarab 2 guruhga bo'lingan. 1-guruhdagi bemorlarda (27 kishi) EA ishlatilgan. Epidural kosmik ponksiyon 18G Tuohy ignasi yordamida L2-L5 hududida "qarshilikni yo'qotish" texnikasi yordamida amalga oshirildi. Shundan so'ng, epidural bo'shliqqa 20G kateter kiritildi va kranial yo'nalishda 3-4 sm ga kengaytirildi, mahalliy og'riqsizlantiruvchi vosita sifatida adrenalin (1: 200000) qo'shilgan 2% lidokain eritmasi (20-28 ml) qo'llaniladi.

U 2-guruhdagi bemorlarda (22 kishi) SA TU aralashuvi paytida og'riqni yo'qotish usuli sifatida ishlatilgan. Orqa miya ponksiyoni L3-L4 va L4-L5 intervertebral bo'shliqlarida 25G, 26G, 27G orqa miya ignalari yordamida amalga oshirildi. MA sifatida 1,5% novokain (4,0-8,0 ml), 2% lidokain (2,5-3,5 ml) yoki 0,5% bupivakain (3 ml) izbarik eritmalari ishlatilgan.

Anesteziya sifatini nazorat qilish hissiy blokning chuqurligini baholash (3 nuqtali "pin" testi yordamida), blokadaning yashirin davri, bloklangan yuqori segmental dermatomni (blokning segmental darajasi), motor blokining chuqurligini (P. Bromage shkalasi bo'yicha) va davomiyligini baholash asosida amalga oshirildi.

Behushlik. Biz baholagan gemodinamik ko'rsatkichlar tadqiqotning 4 bosqichida qayd etilgan: 1-bosqich - behushlikdan oldin, 2-bosqich - operatsiya

boshlanishidan oldin, 3 bosqich - aralashuvning o'rtasida, 4 bosqich - operatsiya tugagandan so'ng. Bunday holda, sistolik qon bosimi (BPsyst.), diastolik qon bosimi (BPdiast.), puls qon bosimi (BPpuls.), o'rtacha qon bosimi (BPmean), yurak urish tezligi (HR), shuningdek, "DxH" indeksi (BPsyst. va HR mahsuloti) dinamikasi o'rganildi. Qonning kislorod bilan to'yinganligi (SaO2) ham kuzatildi. Tadqiqot davomida olingan ma'lumotlar o'zgaruvchanlik statistikasi va taqqoslangan qiymatlarning ishonchliligini baholash usullaridan foydalangan holda statistik qayta ishlandi.

Talaba mezoni.

Jadval 1.

Transuretral aralashuvlarning xususiyatlari va bemorlarni guruhlarga taqsimlash

Трансуретральные вмешательства	1-я группа (ЭА)	2-я группа (СА)	Всего
1. Диагностические трансуретральные процедуры при раке простаты и опухолях мочевого пузыря	–	3	3
2. Механическая литотрипсия камней мочевого пузыря	3	–	3
3. ТУР доброкачественной гиперплазии простаты	12	9	21
4. ТУР опухолей мочевого пузыря	3	4	7
5. ТУВ опухолей мочевого пузыря	1	3	4
6. ТУВ простаты и опухолей мочевого пузыря	1	–	1
7. ТУВ опухолей мочевого пузыря и ТУР простаты	2	–	2
8. ТУР простаты и литотрипсия камней мочевого пузыря	5	–	5
9. ТУР контрактуры шейки мочевого пузыря	–	3	3

Natijalar va muhokama. Tadqiqot davomida olingan natijalar 2-jadvalda keltirilgan. Ushbu jadvaldan ko'rinib turibdiki, EA va SA bilan og'rigan bemorlar guruhlarida gemodinamik ko'rsatkichlarning o'zgarishi odatda bir tomonlama xarakterga ega bo'lib, sistolik va diastolik qon bosimining statistik jihatdan sezilarli darajada pasayishi bilan ifodalanadi. va BP degani. Shu bilan birga, ayrim ko'rsatkichlardagi o'zgarishlarning jiddiyligi, shuningdek, tadqiqotning alohida bosqichlarida ularning dinamikasi sezilarli darajada farq qiladi.

Anesteziya paytida gemodinamikaning holatini kuzatish uchun qon bosimi ko'rsatkichlari orasida o'rtacha qon bosimining o'zgarishini hisobga olgan holda eng oqilona deb hisoblanadigan tavsiyalarni hisobga olgan holda. [8, 11], biz birinchi navbatda ushbu ko'rsatkichning qiyosiy dinamikasiga to'xtalamiz. Shunday qilib, o'rtacha qon bosimining o'rtacha qiymatlarining pasayishi fonida. Tadqiqotning barcha bosqichlarida ikkala guruhdagi bemorlarda eng aniq gipotenziya 2 va 3-bosqichlarda, ya'ni behushlik boshlanganidan keyin va taxminan aralashuvning o'rtasida kuzatilgan. Biroq, agar EA paytida o'rtacha BP maksimal pasaygan bo'lsa.

3-bosqichda qayd etilgan bo'lsa, SA holatida bu tadqiqotning 2-bosqichida sodir bo'lgan. Bundan tashqari, agar ikkala guruhdagi bemorlarda gemodinamik ko'rsatkichlarning boshlang'ich qiymatlari 100% sifatida qabul qilinsa, o'rtacha qon bosimining maksimal pasayishi kuzatiladi. (22,5% ga) bemorlar guruhida kuzatildi

c EA 3-bosqichda, o'rtacha qon bosimining maksimal pasayishi.

Tadqiqotning 2-bosqichida SA bilan og'rigan bemorlarda (26,3% ga) qayd etilgan.

Gipotenziya zo'ravonligidagi ko'rsatilgan nomuvofiqliklarning sabablarini tahlil qilib, SAda gipotenziyaning nisbatan erta rivojlanishi ushbu blokada xarakterli qisqa yashirin davr va to'g'ridan-to'g'ri miya omurilik suyuqligiga kiritilgan anestetikning periferik nerv elementlariga tez ta'siri bilan bog'liq deb taxmin qilish mumkin, orqa miya va orqa miya qismlari.

Shunday qilib, subaraknoid blokada bilan behushlik (shu jumladan simpatik blok) ancha oldin sodir bo'ladi, bu tez gemodinamik kasalliklarga olib keladi, ayniqsa oldingi hajm yuki etarli bo'lmagan bemorlarda. Segmental blokadalar paytida gemodinamik buzilishlarning zo'ravonlik darajasi va chuqurligi asosan tananing adaptiv imkoniyatlari bilan belgilanadi. Shuni hisobga olib, keksa va keksa odamlarda SAda qon aylanish tizimining kutilayotgan buzilishlarining ahamiyati katta ahamiyatga ega [14, 17, 18].

EAda gemodinamik buzilishlarning nisbatan kechroq boshlanishi epidural bo'shliqqa kiritilgan MA eritmasiga erishish uchun ko'proq vaqt kerakligi bilan izohlanadi.

Orqa miya nerv tuzilmalarini blokirovka qilish uchun zarur. Biroq, boshqa tomondan, bu MA ning tizimli ta'sirida namoyon bo'ladi, bu asta-sekin epidural bo'shliqning tomirlariga so'riladi, bu esa o'z navbatida gipotenziyaning kuchayishiga yordam beradi [5, 6, 11].

EA va SA bilan og'rigan bemorlar guruhlarida yurak urish tezligi dinamikasi ham farq qildi. Umuman olganda, ikkala guruhdagi bemorlarda bradikardiyaga bir tomonlama tendentsiya ko'rsatilgan bo'lsa-da, SAda yurak urish tezligining ishonchli pasayishi tadqiqotning 2-bosqichida kuzatildi. Shunday qilib, EA bilan anesteziyaning butun davri davomida yurak urish tezligining sezilarli darajada pasayishi kuzatildi: dastlabki qiymatlar bilan solishtirganda 2-bosqichda 20,4%, 3-bosqichda 18,5% va tadqiqotning 3-bosqichida 11,2%. SA bo'lsa, tadqiqotning yuqoridagi bosqichlarida yurak urish tezligining pasayishi mos ravishda: 9,8%, 6% va 3,2% ni tashkil etdi va oxirgi qiymat dastlabki parametrlarga nisbatan statistik jihatdan ahamiyatsiz bo'lib chiqdi. Ma'lumki, SA dan farqli o'laroq, EAda bradikardiyaga nisbatan aniqroq va uzoq davom etadigan tendentsiya MA plazma kontsentratsiyasining salbiy inotrop ta'siri bilan izohlanadi, chunki EAda MA ning katta dozalari qo'llaniladi, ularning bir qismi asta-sekin epidural bo'shliq tomirlariga so'riladi [5, 10].

Jadval 2. Epidural va o'murtqa behushlik paytida tizimli gemodinamikaning ayrim ko'rsatkichlarining o'zgarishi (M.± m)

Показа-тели (ед.измер.)	До анестезии (1-й этап)		Перед началом операции (2-й этап)		На середине вмешательства (3-й этап)		После окончания операции (4-й этап)	
	ЭА	СА	ЭА	СА	ЭА	СА	ЭА	СА
$АД_{сист.}$ (мм рт.ст.)	138,1±7,3 –	140,3±7,5 –	114,8±6,4 P<0,001	103,3±5,9 P<0,001	105,5±6,3 P<0,001	110,2±7,6 P<0,001	110,6±6,3 P<0,001	117,5±9,1 P<0,01
$АД_{диаст.}$ (мм рт.ст.)	87,9±5,6 –	89,5±5,5 –	74,8±5,0 P<0,01	64,4±4,3 P<0,001	65,7±4,7 P<0,001	69,0±4,9 P<0,001	71,2±4,9 P<0,001	76,1±5,0 P<0,01
$АД_{пульс.}$ (мм рт.ст.)	49,8±3,7 –	50,7±3,7 –	41,1±3,2 P<0,05	39,0±3,0 P<0,001	40,0±3,1 P<0,01	40,9±3,2 P<0,01	39,6±3,3 P<0,01	41,3±3,6 P<0,05
$АД_{сред.}$ (мм рт.ст.)	102,5±6,9 –	106,0±7,0 –	88,1±6,6 P<0,01	78,1±6,5 P<0,001	79,4±5,9 P<0,001	82,6±6,3 P<0,001	84,2±6,3 P<0,001	89,7±6,4 P<0,01
ЧСС (уд/мин)	90,2±5,2 –	89,9±5,0 –	71,8±4,1 P<0,001	81,1±4,4 P<0,01	73,5±4,3 P<0,001	84,5±4,7 P>0,05	79,4±4,3 P<0,01	87,0±4,9 P>0,5
Индекс "Д×Ч"	12455±521 –	12615±493 –	8246±317 P<0,001	8375±330 P<0,001	7760±302 P<0,001	9310±359 P<0,001	8782±388 P<0,001	10219±410 P<0,001

Примечание: показатели достоверности указаны в сравнении с 1-м этапом исследования в соответствующих группах больных.

Natijalarimizni boshqa tadqiqotlar ma'lumotlari bilan taqqoslash shuni ko'rsatadiki, keksa va keksa bemorlarda transuretral aralashuvlar paytida gemodinamik buzilishlarning og'irligi ham juda katta farq qilishi mumkin. Shunday qilib, B.M. Strelets va hammualliflar [15] ta'kidlashlaricha, 2% lidokain eritmasi bilan L1-2 darajasida 1-1,5 ml dozada 1 omurilik segmentida anesteziya rivojlanishidan so'ng CO ning 7-18% ga, BCC ning 5-15% ga kamayishi va qisman 18% ga kamaygan. Boshqa mualliflarning fikriga ko'ra, EA ostida operatsiya qilingan 190 bemordan atigi 9 tasida chuqur gipotenziya kuzatilgan, bu 4,7% ni tashkil etdi [3] yoki ushbu toifadagi bemorlarda sistolik qon bosimining qiymati ko'pi bilan kamaydi.

Dastlabki qiymatlarning 10-15% [6, 10]. Kuzmich A.A. va hammualliflar [9] gerontologik bemorlarda transuretral aralashuvlar paytida SA kursini tahlil qilib, BP degan xulosaga kelishdi. behushlik paytida boshlang'ich darajadan 10-20% ga kamaydi. Aniqroq arterial gipotenziya faqat 4 bemorda (3,8%) kuzatilgan. Boshqa mualliflar dastlabki ma'lumotlar bilan solishtirganda qon bosimining o'rtacha 13,8% ga pasayishini va yurak urish tezligini 12,8% ga kamaytirishini yoki 2% lidokain eritmasi bilan SA bilan sezilarli gipotenziya rivojlanishini aniqladilar, bu esa kristalloidlar va kolloidlarni vazopressorlar bilan birgalikda shoshilinch infuzionni talab qiladi, faqat 1 bemorda.

[13]. Leonov A.V. va hammualliflar [12], shuningdek, keksa va keksa bemorlarda transuretral aralashuvlar paytida SA ning umumiy intravenöz behushlik bilan solishtirganda aniq afzalligini ta'kidlaydilar.

Bizning fikrimizcha, adabiyot ma'lumotlarining nomuvofiqligi, shuningdek, bizning natijalarimiz segmental blokadalar paytida ma'lumotlarni yig'ish metodologiyasiga ham bog'liq bo'lishi mumkin. Ma'lumki, amalda EA va SAda gipotenziyani to'g'irlash uchun vazopressorlarning kichik dozalarini fraksiyonel yuborish qo'llaniladi. Shuni hisobga olgan holda, gemodinamik ko'rsatkichlar vazopressorlarni kiritish vaqti va gemodinamik parametrlarni qayd etish vaqti nisbatiga juda bog'liq. Bemorlarimizda kuzatilgan gemodinamik ko'rsatkichlarning aniqroq o'zgarishini biz gipotenziya yoki bradikardiya balandligidagi parametrlarni

qayd etganimiz va keyin ularni farmakologik tuzatishni amalga oshirganimiz bilan izohlaymiz. Bizning fikrimizcha, ma'lumotlarni qayd etishning ushbu usuli vaqti-vaqti bilan ishlatiladigan vazopressorlar va antikolinerjiklarning tuzatuvchi dozalari ta'siriga kamroq sezgir bo'lgan ko'proq ob'ektiv tadqiqot natijalarini beradi.

B Xulosa qilib aytganda, TU operatsiyalarida anesteziya paytida biz aniqlagan gemodinamik o'zgarishlarning klinik ahamiyati haqida to'xtalib o'tishimiz kerak. Tabiiyki, jarrohlik va behushlik keksa va keksa bemorlarning tanasi uchun ekstremal shartlardir. Ma'lumki, segmental blokadalar paytida anestezikani boshqarish xavfsizligi hayotiy organlar va tizimlarning, birinchi navbatda, yurak-qon tomir tizimining minimal bostirilishi bilan belgilanadi [2, 12, 14, 19]. Shu bilan birga, umumiy behushlik va mintaqaviy behushlik paytida "qon aylanish tushkunligi" yoki "miokard tushkunligi" atamalarining semantik ma'nosini bir ma'noli deb hisoblash mumkin emas. Hozirgi vaqtda umumiy anestetik dorilarning aksariyati miyokardga to'g'ridan-to'g'ri depressant ta'sir ko'rsatishini isbotlash uchun qo'shimcha dalillar talab qilinmaydi [4, 19]. Bunday holda, yurak mushaklarining ish sharoitlari ko'pincha qon bosimining oshishi bilan bog'liq bo'lgan miyokardga keyingi yukning oshishi va shuning uchun umumiy periferik tomir qarshiligi bilan yanada murakkablashadi.

(OPSS) (traxeya entübatsiyasi vaqtida, jarrohlik jarohati balandligida, ekstubatsiya paytida va boshqalar). Tabiiyki, bu yurak-qon tomir tizimining kompensatsion imkoniyatlari cheklangan gerontologik profilli bemorlarda salbiy oqibatlarga olib keladi.

C Boshqa tomondan, segmental blokadalar paytida "qon aylanishini inhibe qilish" so'zma-so'z tushunilmasligi kerak. Darhol shuni ta'kidlashimiz kerakki, bizning tadqiqotimiz miyokardning asab tuzilmalariga bevosita simpatikolitik ta'sir ko'rsatadigan lomber bloklar bilan bog'liq. Shunday qilib, lomber SA bilan (tabiiyki, agar texnika benuqson bo'lsa), MA ning miyokardga salbiy inotrop va xronotrop ta'siri butunlay chiqarib tashlanadi. Shuning uchun qon bosimining kuzatilgan pasayishi (va shuning uchun umumiy periferik tomir qarshiligi) faqat rivojlangan blokada hududida simpatoliz tufayli yuzaga keladi. Yukdan keyingi yukning hamroh bo'lgan kamayishi miyokardga ijobiy ta'sir ko'rsatadi va uning ishini osonlashtiradi. Bunday sharoitlarda SA ning salbiy gemodinamik ta'sirini oldini olish uchun eng muhimlari quyidagilardir: 1) CVPning pasayishiga yo'l qo'ymaslik uchun etarli venoz qaytishni ta'minlash; 2) qon bosimining, ayniqsa diastolik qon bosimining sezilarli darajada pasayishining oldini olish, chunki koronar arteriyalarni qon bilan to'ldirish aniq diastol davrida sodir bo'ladi.

Agar yuqoridagi shartlar bajarilsa, umumiy behushlikning turli xil variantlari bilan solishtirganda, gerontologik bemorlarda SA davrida yurak-qon tomir tizimining ishlashi uchun tubdan qulayroq sharoitlar yaratiladi. Buni biz aniqlagan "DxH" ko'rsatkichining pasayishi (tadqiqotning 2, 3 va 4-bosqichlarida boshlang'ich qiymatlarga nisbatan 32,6%, 21,2% va 9% ga) tasdiqlaydi. Kuzatishlar shuni ko'rsatadiki, "DxH" ko'rsatkichi mos ravishda o'zgaradi

O2 uchun miyokard ehtiyojlari bilan bevosita bog'liqlik. Ushbu ko'rsatkichni baholashda ma'lum bir sub'ektivlikka yo'l qo'ysangiz ham (chunki u miyokard

kislorodiga bo'lgan ehtiyojni to'g'ridan-to'g'ri baholash usullariga asoslanmagan), hech bo'lmaganda miyokardga keyingi yukning pasayishi O2 ga bo'lgan ehtiyojning pasayishiga yordam berishiga rozi bo'lish kerak. Bunday sharoitda tizimli qon bosimining pasayishi natijasida koronar qon oqimining pasayishi ham miokard gipoksiyasi bilan birga kelmaydi [2, 8, 11].

B SA bilan solishtirganda, EA "DxH" indeksining biroz aniqroq pasayishini ko'rsatdi (tadqiqotning 2, 3 va 4-bosqichlarida dastlabki qiymatlarga nisbatan 33,8%, 37,7% va 19,5% ga). Hisob-kitoblar shuni ko'rsatadiki, EAda "DxH" indeksining yanada aniq pasayishiga sabab bu holatda kuzatiladigan aniqroq bradikardiyadir. MA ning farmakologik ta'siri epidural bo'shliqdan so'riladi deb taxmin qilish mantiqan to'g'ri keladi, bu ham ma'lum.

Antiaritmik dori, yurak tezligini kamaytirishga yordam beradi. Shuni ta'kidlash kerakki, segmentar blokadalar paytida og'ir bradikardiya rivojlanishi qon aylanishida istalmagan kollapsga o'xshash o'zgarishlarga olib kelishi mumkin. Shuni hisobga olgan holda, gerontologik profilga ega bo'lgan bemorlarda EAni qo'llash yanada ehtiyotkorlik bilan monitoringni talab qiladi.

Yurakning tezligi va antikolinerjik (atropin) yoki (-adrenerjik, odatda efedrin) preparatlarini o'z vaqtida qo'llash. Bundan tashqari, EA bilan adrenalinni MA bilan birgalikda qo'llash epidural bo'shliq tomirlariga MA ning so'rilishini kamaytiradi, lidokain kabi dorilarning plazma kontsentratsiyasini kamaytirish nuqtai nazaridan ma'lum foyda keltiradi [8, 15, 18].

Shunday qilib, bizning tadqiqotimiz shuni ko'rsatadiki, texnikaga ehtiyotkorlik bilan rioya qilish va ishlatiladigan MA turi va dozasini oqilona tanlash bilan SA va EA umumiy behushlik bilan solishtirganda, keksa va keksa bemorlarda TU aralashuvi paytida yurak-qon tomir tizimining ishlashi uchun tubdan qulayroq sharoit yaratadi.

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MODERN METHODS IN THE METHODOLOGY OF TEACHING FOREIGN LANGUAGES

Abstract: *The article examines various methods of teaching foreign languages, including traditional (grammar-translation, audio-lingual, conscious-comparative) and modern approaches (communicative, project, intensive, activity-based). Their advantages, disadvantages and areas of application are analyzed. Particular attention is paid to communication-oriented concepts that occupy a leading place in modern education. The study is aimed at identifying the most effective strategies for teaching languages depending on the goals, level of students' preparation and the context of learning.*

Key words*: grammar-translation method, audio-lingual method, communicative method, project methodology, intensive learning, activity-based approach, language teaching.*

Teaching methods are “ways of interaction between a teacher and students aimed at solving a set of educational and upbringing tasks”. What is essential in these definitions is that, firstly, this is an activity aimed at teaching an individual and solving educational and upbringing tasks, and secondly, it is always a joint activity of the teacher and the student. It follows that the basis of the concept of “teaching method” is the activity of the subjects of the educational process.

Teacher of English and German Modern methods and models in teaching foreign languages are both the goal and the means of teaching; 2) Language is a means of communication, identification, socialization and introducing an individual to the cultural values of the country of the studied language; 3) Mastering a foreign language differs from mastering a native language in the methods of mastering; the density of information in communication; the inclusion of language in communicative activity; the set of functions implemented. With this approach, positive conditions are created for the active and free development of the individual in activity. Relationships are built on non-judgmentalism, non-criticism and "empathy" (sympathy and understanding of the experiences of others). Finally, knowledge is designed to form in students tolerance of cultural diversity and an orientation towards the "whole world", in which the language of communication is "global English". 2. Intensive methods

The minimum period of study necessary to achieve the goal (future speech activity) with the maximum volume of educational material necessary for this goal and its corresponding organization and the maximum use of all reserves of the student's personality, achieved in conditions of special interaction in the study group with the creative influence of the teacher's personality. The features of this technology consist of the use of techniques that activate conscious and subconscious

processes of the psyche to create an extensive and strong language base; in the development of tasks that motivate communication; in the optimal organization of collective interaction of students with each other and with the teacher.

The implementation of the teaching method is carried out through the use of a number of teaching methods, various approaches and working techniques. "Teaching methods are a set of specific learning situations that contribute to the achievement of the intermediate (auxiliary) goal of a specific method." Unfortunately, in teaching practice, foreign language teachers often use time-tested standard teaching methods. Sometimes the process of teaching a language, sadly, continues to remain a "somewhat modernized version" of the grammar-translation method. The requirements for a foreign language lesson change over time, and new teaching methods are developed. At the current stage of scientific development in Uzbekistan, we can definitely say that the times when the ability to translate adapted, inauthentic texts from a foreign language and vice versa was sufficient proof of language acquisition have already passed. Today, the educational process in universities of Uzbekistan is being reformed in accordance with pan-European requirements for the quality of education: informatization of the educational space, integration processes in modern domestic education, establishment of cooperation between universities and European educational institutions in the field of educational and scientific activities, international student exchanges, the possibility of obtaining a second higher education and studying under master's programs abroad. In the context of reforming higher education, educational technologies for teaching foreign languages should also change. Language education itself is also gradually being modernized through the introduction of a modular-rating system for teaching foreign languages, interdisciplinary integration, democratization and economization of education brings to life innovations in the components of teaching foreign languages. All this puts new requirements on teaching and a teacher of a foreign language in universities. The goal of teaching a foreign language in higher education at the present stage is to master students' communicative competencies that will allow them to implement their knowledge, skills, and abilities to solve specific communicative problems in real life situations. A foreign language acts as a means of communication, interaction with representatives of other nations, so in education the cultural or intercultural approach to teaching continues to develop in the framework of the concept of "dialogue of cultures", with the aim of forming students' polymer literacy.

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APPLICATION OF DIGITAL TELEMETRY SYSTEMS IN MEDICINE

Abstract: *This paper explores the role and significance of digital telemetry systems in modern medical practice. It discusses how these technologies enable continuous remote monitoring of patients' vital signs, contributing to improved diagnosis, treatment, and patient outcomes. The use of telemetry is particularly valuable in managing chronic diseases, providing care in rural or underserved areas, and enhancing the efficiency of healthcare services through real-time data transmission. The paper also analyzes current challenges such as data security, system costs, and technological limitations. Despite these issues, the growing integration of artificial intelligence and wireless communication continues to expand the potential of telemetry in healthcare. The study concludes that digital telemetry systems are a vital component of the future of medicine, especially in the era of digital transformation and patient-centered care.*

Keywords*: Telemetry, Digital Health, Remote Monitoring, Wearable Devices, Vital Signs, Data Transmission, Artificial, Interoperability.*

Introduction

The integration of advanced technologies into healthcare has led to significant improvements in the way patients are diagnosed, monitored, and treated. One of the most impactful developments in this area is the use of digital telemetry systems. These systems allow for the wireless transmission of real-time physiological data from a patient to medical professionals, often without requiring the patient to be physically present in a hospital or clinic. In an era where efficiency, accuracy, and remote healthcare services are becoming increasingly vital, digital telemetry provides a reliable and innovative solution. Digital telemetry in medicine typically involves sensors attached to or implanted in the patient's body, which collect vital signs such as heart rate, respiratory rate, blood pressure, temperature, and even blood glucose levels. These sensors are connected to a transmitter that sends the data to a centralized monitoring system, where healthcare providers can observe and assess the patient's condition continuously. This is particularly important in critical care units, postoperative recovery, and long-term management of chronic diseases like diabetes, heart failure, and respiratory illnesses.

The COVID-19 pandemic further emphasized the importance of remote patient monitoring systems. During times of restricted physical contact and overloaded hospitals, digital telemetry allowed for continuous supervision of patients from home, reducing the risk of infection while ensuring adequate medical care. Moreover, the use of telemetry has been extended to ambulances, where paramedics can transmit real-time patient data to the emergency department before

arrival, allowing for better preparation and faster intervention. In addition to clinical benefits, digital telemetry enhances the overall healthcare system by improving workflow efficiency, reducing hospitalization costs, and optimizing resource allocation. It empowers patients to take an active role in managing their health, as they can view their own data through connected mobile applications and receive alerts if any abnormal parameters are detected.

Literature review and method

Digital telemetry in medicine refers to the use of electronic systems to remotely monitor and transmit patient data over distances. This technology has become increasingly important in modern healthcare due to its ability to track vital signs continuously and in real time. It allows healthcare providers to receive immediate updates on patient conditions without the need for physical presence. This is particularly useful for managing chronic illnesses and providing emergency care. The growing demand for home-based monitoring and telehealth services has accelerated the adoption of telemetry systems. Moreover, advancements in wireless communication and sensor miniaturization have made these systems more accessible and efficient. The introduction of such technology marks a turning point in how medicine is delivered, moving from reactive to proactive care. Overall, digital telemetry represents a significant step toward more personalized, connected, and efficient medical services.

A typical digital telemetry system consists of several core components: sensors, a transmitter, a communication interface, a central monitoring unit, and data storage or display devices. Sensors are placed on or within the patient's body to collect real-time physiological data such as ECG, temperature, respiration rate, and blood pressure. These sensors are connected to a transmitter, which sends the data wirelessly usually via Bluetooth, Wi-Fi, or cellular networks—to a centralized monitoring system. The data is then processed and displayed on medical dashboards, allowing physicians to observe trends and detect abnormalities. Some systems also include AI algorithms that analyze the data for early warning signs of deterioration. Data can be stored locally or uploaded to the cloud for long-term analysis. Each component must be integrated seamlessly to ensure accuracy, reliability, and patient safety. Security protocols are also essential to protect sensitive patient information.

Digital telemetry systems are used across various fields of medicine to improve diagnostics, patient safety, and treatment outcomes. In cardiology, telemetry is widely used to monitor heart rhythms and detect arrhythmias in real time. In intensive care units (ICUs), telemetry supports continuous surveillance of critically ill patients, enabling quick intervention when vital signs fluctuate. For patients with diabetes, wearable telemetry systems can monitor blood glucose levels and alert users to dangerous highs or lows. Telemetry is also applied in respiratory care, monitoring oxygen saturation and breathing rates in patients with chronic lung disease. During surgeries and postoperative recovery, telemetry helps track the patient's condition without interrupting care. Moreover, mobile units like ambulances are increasingly equipped with telemetry to share patient data with

hospitals en route. Telemetry even extends to mental health care, where biofeedback sensors monitor stress and anxiety levels.

The use of digital telemetry in healthcare offers numerous advantages. First and foremost, it enables continuous monitoring, reducing the likelihood of missing critical changes in a patient's condition. This leads to faster decision-making and improved outcomes, particularly in emergency and critical care. Secondly, it allows for remote patient management, which is essential for rural or immobile patients. This reduces hospital congestion and lowers healthcare costs. Another key benefit is early detection of disease exacerbations, as real-time data trends can reveal warning signs before visible symptoms appear. Telemetry also enhances patient engagement, giving them access to their health data and encouraging proactive management. For healthcare providers, it simplifies workflow and documentation through automated data collection. Moreover, the integration of AI and predictive analytics in telemetry platforms offers smarter, data-driven clinical decisions. Overall, telemetry strengthens both preventative and responsive care models.

Despite its advantages, digital telemetry faces several challenges and limitations. One major concern is data security and patient privacy, as health information is transmitted over networks that could be vulnerable to cyberattacks. Ensuring compliance with data protection regulations such as HIPAA or GDPR is essential. Another limitation is cost both initial setup and maintenance can be expensive, especially for underfunded healthcare systems. Technical issues like connectivity problems, sensor malfunction, or software bugs may compromise data accuracy. Additionally, not all patients are comfortable or familiar with wearable technology, especially the elderly. Training medical staff to properly use telemetry systems also requires time and resources. Interoperability between different devices and software platforms remains a technical hurdle, often leading to fragmented data. Lastly, over-reliance on remote data may reduce the emphasis on physical examination and direct interaction with patients, which is still critical in clinical judgment.

The future of digital telemetry in medicine is full of promise, driven by rapid technological innovation. One major area of growth is the development of smart wearable devices that are more compact, energy-efficient, and capable of measuring multiple parameters simultaneously. Artificial intelligence and machine learning algorithms are being integrated into telemetry systems to enhance predictive capabilities, allowing early identification of conditions like cardiac arrest or sepsis. 5G technology is also expected to significantly improve data transmission speed and reliability, making real-time remote care even more effective. Telemetry is likely to expand beyond hospitals into everyday environments such as homes, workplaces, and even schools, contributing to preventive health strategies. Advances in biosensor materials, such as graphene and nanotechnology, will further improve sensitivity and comfort. As the global demand for personalized healthcare continues to rise, digital telemetry is set to become a cornerstone of next-generation medicine.

Digital telemetry systems represent a transformative shift in the way medical care is delivered and managed. By enabling real-time, remote monitoring of

patients' vital signs, these systems support more responsive, cost-effective, and personalized healthcare. From emergency services to chronic disease management, the applications of telemetry are wide-ranging and impactful. However, challenges such as data security, cost, and technical limitations must be carefully addressed to maximize their potential. As technology continues to evolve, the integration of AI, improved connectivity, and wearable innovations will further enhance the effectiveness and accessibility of telemetry in medicine. In conclusion, digital telemetry is not just a tool but a key driver of modern healthcare transformation, offering a smarter, more connected future in medicine.

Discussion

The implementation of digital telemetry systems in healthcare has introduced a paradigm shift in how medical professionals monitor and manage patients. As explored in earlier sections, these systems allow for continuous, real-time observation of vital signs without requiring patients to remain in clinical settings. This is especially important in today's world, where both chronic diseases and demand for home-based care are steadily increasing. The ability to detect abnormalities early through telemetry can prevent complications, hospital readmissions, and in many cases, save lives. One of the most significant benefits of telemetry is its contribution to remote patient care. With the rise of telemedicine, patients can now be monitored at home or in rural areas where access to healthcare facilities is limited. This reduces pressure on hospitals and allows healthcare professionals to focus on critical cases. For example, heart failure patients can be tracked at home, and any signs of worsening conditions can trigger an automatic alert to the physician.

However, it's essential to understand that telemetry systems are not without limitations. Despite their clear advantages, challenges such as data security, high costs, and occasional technical failures need serious consideration. The possibility of hacking or data breaches puts patient privacy at risk, which raises ethical and legal concerns. Moreover, in lower-income countries or regions, the cost of equipment and maintenance may hinder widespread adoption. There's also a human factor to consider. Not all patients are comfortable using wearable technology, especially elderly individuals who may have trouble operating such devices or may feel overwhelmed by the technology. Medical staff must also be properly trained to interpret telemetry data, respond to alerts, and troubleshoot issues - something that may not yet be standard in all health institutions.

Despite these concerns, ongoing technological innovations are addressing many of the current limitations. Improvements in battery life, miniaturization, sensor accuracy, and wireless communication have made telemetry more reliable and patient-friendly. In addition, artificial intelligence (AI) and cloud computing are beginning to enhance data interpretation, making it easier for clinicians to make decisions based on complex datasets. In a broader sense, the discussion around telemetry also brings up ethical considerations. While it empowers patients and brings healthcare closer to them, it also raises questions about how much surveillance is acceptable and how we ensure consent and autonomy. Balancing

patient safety with privacy and independence will be a crucial topic as the technology becomes even more widespread.

Conclusion

In conclusion, digital telemetry systems have become a powerful tool in modern medicine, significantly enhancing how patient health is monitored, managed, and maintained. By enabling real-time, remote access to vital signs and other medical data, telemetry allows healthcare providers to respond faster, reduce hospitalization rates, and offer more personalized care. Especially in critical care, chronic disease management, and telemedicine, telemetry has proven its value through improved outcomes and greater patient comfort. While the benefits are substantial, challenges such as high costs, data privacy concerns, and the need for technical infrastructure cannot be ignored. For telemetry to reach its full potential, it must be supported by investment in digital health infrastructure, staff training, and strong security systems. Additionally, efforts should be made to make this technology more user-friendly and affordable, particularly in developing regions. As healthcare continues to move toward digitalization and patient-centered models, telemetry systems will play an increasingly central role. With ongoing advancements in artificial intelligence, wearable technology, and wireless communication, the future of digital telemetry in medicine looks promising. It is not just a technical innovation, but a critical step toward smarter, more efficient, and more responsive healthcare.

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DIGITAL ECONOMY AND ITS IMPACT ON THE DEVELOPMENT OF DIGITALIZATION OF THE TRANSPORT INDUSTRY IN THE WORLD

Abstract: *This article examines the impact of digitalization processes on Uzbekistan's transport sector, focusing on the implementation of automation technologies, intelligent transport systems, robotics, and digital platforms. The study highlights how digital transformation encompasses all levels of transport infrastructure — from management and logistics to maintenance and customer interaction. Special attention is given to the prospects and challenges of introducing autonomous systems, drones, and AI, as well as the risk of market monopolization. The article concludes that a proper regulatory framework is essential to ensure sustainable and equitable development of the industry.*

Keywords: *digitalization, transport sector, automation, intelligent systems, robotics, logistics platforms, artificial intelligence.*

Introduction

Uzbekistan, as an active participant in the global economy, is also aware of the importance of digitalization processes in the transport sector. The introduction of digital technologies in this industry is of strategic importance for the modern development of the country. However, there is still no unambiguous assessment of the potential transformations that may occur in the Uzbek economy as a result of digitalization, and there is also no clear understanding of how and in what time frame these transformations will manifest themselves.

Uzbekistan's transport sector was one of the first to feel the impact of digital technologies. The need to automate management and improve the reliability of the transport system has prompted transport companies to strive for computerization of management processes before other industries, and then expand digitalization to the entire transport sector [2].

There are several approaches to the definition of digitalization in the scientific literature. The following approach is used in this work: digitalization is a complex of processes in the economy and society based on the widespread use of technologies using binary code. As a result of this digital transformation, there are noticeable qualitative changes in the organization of technological and social structures [8].

Materials and methods. In this article, the methodological basis was the scientific research of such scientists as T.V. Avdienko, A.N. Dmitrievsky, T.N. Yudina, J.E.Grunig, A.J.Ritchie, F.A.Abdulloeva, B.M.Karimov, B.S.Alimov, T.U.

Kodirov who consider digitalization as an economic phenomenon. In addition, the works of N.P. Tereshin, V.P. Bychkov and V.I. Belov were used as a conceptual basis for understanding the technical and economic foundations of the transport sector. The very concept of digitalization has a wide range of meanings, and without delving into the discussion about all its manifestations, we took into account the fact that in the context of the transport sector, digitalization is a large-scale introduction of digital technologies both at the management level and at the technological level [5].

One of the characteristic features of digitalization in the transport sector is its uneven development in various directions, despite the significant potential need for digitalization. The active use of digital technologies seems to be the most promising way to increase the economic efficiency of this area. Table 1 shows the most common areas of application of digital technologies in transport.

Table 1.

The Directions of using digital technologies in the transport sector.

The direction of the impact	An example of the technology application
Electronic document management	Introduction of electronic tickets, remote registration of travel documents; creation of "virtual offices", customer service without personal contact
Remote communication	Using digital communication technologies for live remote communication
Making a payment	Mobile payment, unified travel documents, use of mobile applications to receive transport services
Cloud technologies	Data processing at a qualitatively new level: collection and analysis of data on traffic flows, the use of "big data" technologies
Integrated transport management systems	Reorganization of transport management systems, their automation; involvement of the client in the process of cargo management and control

Intelligent transport systems	Automation and robotization of traffic flow control, forecasting of the transport situation, support for autopilot systems
Platforms for the provision of logistics services	Creation of digital platforms focused on the provision of logistics services, including booking and booking tickets, search for a carrier for goods, identification of the optimal route

Thus, digitalization in the transport sector is a heterogeneous process that can bring significant economic benefits.

Indeed, the transport industry is one of the most affected by the processes of digitalization in the economy. This impact can be divided into two main categories: superficial changes associated with the penetration of already successfully tested technologies into the transport sector, and changes occurring in the very technical and economic base of the transport infrastructure [11].

In the first case, digitalization of the transport sector means the introduction of technologies that are already successfully used in other industries, such as big data analysis and intellectualization processes. An example of such technologies is intelligent transport systems (ITS), which are the main trend of technological development in the industry. In the second case, digitalization of the transport sector involves changing the very technical and economic basis of production. Currently, there are four key areas of the digitalization process in the transport industry: 1) digitalization of transport infrastructure and logistics chains (including warehousing and service centers); 2) robotization of production processes; 3) large-scale automation, including management processes; 4) introduction of autopilot systems [14]. It will be better to analyze these processes in more detail:

Digitalization of transport infrastructure and logistics chains, including warehousing and service centers. This includes the introduction of digital technologies to optimize and improve management and coordination in the transport infrastructure.

These areas of digitalization have the potential to significantly improve efficiency, safety and management in the transportation industry. Digitalization of transport infrastructure includes the involvement of each stage of the logistics chain and vehicles in the digital sphere. This is achieved by assigning a personal identification to each element through an internet connection and software control. One example of such digitalization is the equipping of shipping containers with chips that allow you to track and control the movement of each container in real time. Thanks to this, it is possible to effectively manage the entire traffic flow, predict and optimize logistics processes. The advantages of digitalization of transport infrastructure include:

Improved management: digital systems allow real-time tracking and control of the movement of goods and vehicles, which ensures more efficient and accurate management of logistics processes.

Cost reduction: Digital technologies make it possible to optimize routes, manage inventory and minimize downtime and delays, which leads to a reduction in overall costs in the transport sector.

Increased predictability: Thanks to digital control and data analysis, possible problems and delays can be predicted, which allows you to take preventive measures and improve planning and response to changes.

Improving security: digital systems can provide more accurate monitoring and control of the safety of vehicles and goods, as well as warn about potential risks and emergencies.

Digitalization of transport infrastructure has great potential for optimizing and improving logistics processes, which contributes to a more efficient and sustainable transport industry.

Robotization of production processes. This means using robots and automated systems to perform various tasks in the transportation industry, such as warehousing and moving goods, sorting and packaging.

In the transport sector, there is a significant acceleration of the process of robotization of production operations. However, progress in the field of automation is especially noticeable in the warehouse sector, where tasks related to packing and packing of cargo still require extensive use of manual labor. Technological innovations and the development of robotics contribute to the automation and optimization of processes inside warehouses. Robotic manipulators equipped with advanced algorithms and sensors are actively used to perform complex tasks such as sorting, packing and packing of cargo. The ability to automatically determine the size, shape and weight of objects allows robots to perform these operations efficiently and accurately. It is worth noting that vehicle maintenance is still an area where manual labor prevails. Technical difficulties and the variety of vehicle models pose challenges for the full automation of this process. Interaction with various types of vehicles, their inspection, diagnosis and maintenance require human involvement and experience. However, even here we can observe a trend towards the introduction of automated systems. For example, modern technologies allow the use of robotic arms to perform certain vehicle maintenance tasks, such as wheel replacement, refueling and maintenance of rolling stock. This reduces the time and increases the efficiency of the maintenance process.

Thus, although the robotization of production processes in the transport sector is progressing rapidly, warehousing and vehicle maintenance remain labor-intensive components that require further development and innovation in the field of automation.

Large-scale automation, including management processes. Digital technologies make it possible to automate various management processes, such as personnel management, finance, logistics and other aspects of the work of transport companies.

Automation of management processes has been observed in the transport sector for a long time. In fact, the transport industry was one of the first to introduce automation into management activities. The rapid speed of modern traffic flows creates a situation in which a person is physically unable to make competent and informed decisions without the risk of making a critical mistake. With the development of information technology and transport management systems, including automatic control and management systems, decision-making processes have become significantly automated. Data collection and analysis systems, machine learning and artificial intelligence algorithms make it possible to effectively manage complex transport systems. Modern automated transport management systems monitor traffic flows, predict and optimize routes, analyze data on the condition of vehicles and ensure timely response to emerging problems. They are able to process large amounts of information and make decisions based on accurate and up-to-date data, which reduces the likelihood of errors and improves the efficiency of transport system management.

Automation of management processes in the transport sector is an integral part of modern transport management. It allows you to cope with the high speed of traffic flows and ensure that competent decisions are made based on accurate information, minimizing the risks of critical errors.

Implementation of autopilot systems. The development of autonomous and semi-autonomous vehicles, including cars, trucks, trains and drones, is a significant aspect of the digitalization of the transport sector.

The introduction of autopilot systems from a technological perspective has been going on for a long time, primarily in the field of civil aviation and maritime cargo transport. However, the mass adoption of such technologies in most countries is limited by legislative norms. Currently, only some experimental projects in public transport are in operation, for example, unmanned buses. In aviation, autopilots have long been used to automate flights and ensure passenger safety. Autopilot systems are capable of performing a wide range of tasks, including controlling the height, speed and direction of the aircraft, as well as automatic landing. They are based on advanced algorithms and sensors, as well as interact with navigation systems, which allows for high accuracy and efficiency in flight control. In maritime transport, autopilot systems are also being used to automate the management of cargo ships. They are able to control the course, speed and maneuverability of the vessel, which simplifies the tasks of the crew and increases the safety of maritime transportation.

However, issues of legislative regulation and regulatory restrictions are becoming an obstacle to the mass implementation of autopilot systems in various modes of transport. Despite the potential benefits in terms of safety and efficiency, legislators are faced with the need to develop and establish strict rules and regulations to ensure the reliability and minimize the risks of automated systems. At the moment, unmanned buses and other similar projects are at the stage of experiments and pilot programs in various countries. Such projects help to collect data, assess the benefits and possible risks, as well as build a legislative and

regulatory framework for the future implementation of autopilot systems in public transport. The introduction of autopilot systems in various areas of transport already has a technological base, however, restrictions related to the legislative and regulatory sphere have so far hindered their mass application.

The results of the study and their discussion. Digitalization, as a phenomenon associated with the penetration of digital technologies into the transport sector, has been identified and studied for a long time. In fact, it can be argued that the beginning of the integration of digital technologies into the transport sector coincided with the advent of electronic computing devices. Over a long period, many projects have been implemented both at the level of government initiatives and at the level of private companies (see table 2).

Table 2.

Examples of digital technologies in the transport sector

Technology	Function
SARTRE	Creation of passenger vehicles with centralized remote control, ensuring safety for pedestrians and the environment
Open Shuttle	Interactive automatic cargo picking system using trolleys
Pick by light	The use of light pointers to simplify the operation of robotic vehicles
Put by Beamer	Automated technology for receiving and distributing goods in a warehouse
Automated port complexes	The use of automated storage systems in seaports, especially in container terminals

It is important to note that the digitalization of the transport sector has had a significant impact on its technological development. The projects implemented in this area included a wide range of innovative solutions and the use of advanced technologies. Such projects have not only increased the efficiency and reliability of transport systems, but also significantly improved conditions for passengers and cargo transportation.

It should be noted that the use of automated transport systems remains the subject of active discussions, and there is still no consensus in society on this issue.

There are threats and risks that are considered to be the immediate consequences of automation in the transportation industry. These include:

• A possible massive increase in unemployment among drivers who may lose the opportunity to find a job in their profession.

• Difficulties in determining liability in the event of an insured event when automated vehicles are involved in an accident.

• The risk of software failures, which can lead to loss of control over the controlled vehicle.

Nevertheless, the introduction of such technologies also brings a number of clear advantages (fig. 1):

✓ Improving efficiency in the transport sector as a whole, which includes reducing fuel costs, increasing road capacity, reducing accidents, reducing the number of victims of accidents and reducing cargo damage during transportation.

✓ Reduction of labor costs for drivers and other employees whose positions will be automated.

✓ Reduction of vehicle downtime.

✓ Eliminating the possibility of human error, the so-called "human factor", through the use of automation.

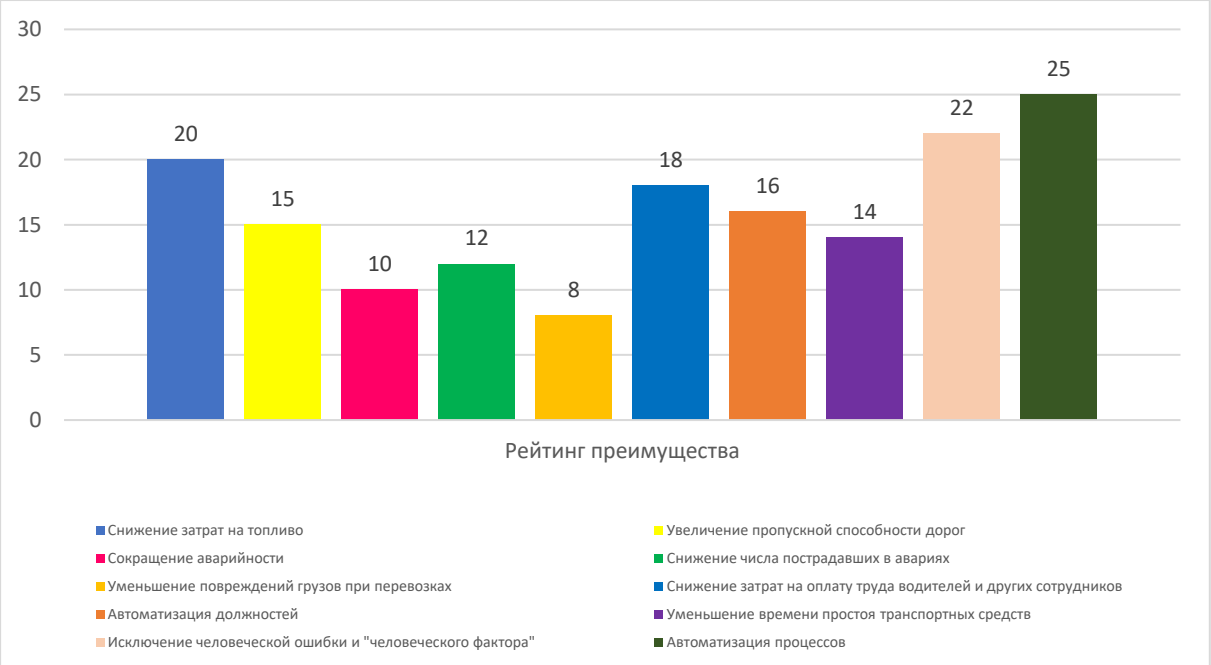

Fig. 1. Rating of advantages of the introduction of digital technologies in the transport sector.

An important trend is that artificial intelligence (AI) is becoming a universal technology for transportation. In addition, people themselves, including ordinary citizens, are increasingly equipped with various technologies, mainly thanks to smartphones. Mobile devices and their widespread use make it possible to rethink the interaction of the transport sector with users. The emergence of services such as

Uber and the concepts of "uberization" have radically changed the basic principles of providing services in the transport industry.

Robotization in the transport sector is characterized by its specificity, which distinguishes it from other sectors of economic activity. In particular, robotics is often seen as the process of creating and using physical machines capable of simulating human actions. However, autonomous systems actually cover a much wider range of areas. A more precise definition of robotics is the development and application of self-controlled adaptive intelligent systems capable of performing their production functions regardless of the degree of human intervention. In the transport sector, robotization includes both the introduction of autonomous vehicles, as well as the automation of production and the use of equipment operating without human intervention. The following types of robotic equipment stand out in the transportation industry: 1) robots operating in a human environment; 2) robotic production systems that do not require human intervention; 3) autonomous vehicles [12].

With regard to specific examples, it can be noted that autonomous systems have long been used at service stations, both in road and rail transport. The accumulated experience makes it possible in the future to expand the use of such technologies to all components of the transport sector, especially given the increasing involvement of artificial intelligence (AI) technologies. For example, in the railway industry, automated autonomous systems can be used to monitor the condition of rails. This reduces the risk and does not require the involvement of additional workers, and also allows you to carry out control work at any time of the day with the same efficiency. The railway infrastructure provides favorable conditions for the introduction of robotic systems. With their help, routine maintenance can be carried out, such as cleaning, salt distribution and embankment strengthening. Autonomous stations also provide convenient placement of scanning devices and other equipment for testing the condition of the trackbed, rails and track infrastructure [9]. This allows for more accurate and systematic testing, as well as collecting data for analysis and decision-making on maintenance and repair.

The use of unmanned aerial vehicles, known as drones, is a separate issue that does not yet have a clear legal basis in most countries and is limited in its application. Nevertheless, the potential for the use of drones in the transport sector is huge. They can be effectively used to perform various tasks such as aerial photography, constant monitoring and cargo tracking. With the development of technology, the power of drones is constantly increasing, which will soon allow them to be used to transport people and goods to remote areas. The ability to control a large number of drones, forming "swarm robots", i.e. coordination of their actions by one operator or artificial intelligence, opens up prospects for performing repair work and other complex tasks. Currently, drones are mainly used for external surveillance. For example, in Germany, patrol drones are used to monitor sections of the railway track in order to identify violators and vandals. However, the potential of drones is expanding so much that they can become a new type of transport.

The use of new digital technologies, such as drones and robotic suits (exoskeletons) for workers, has practical benefits and allows solving more urgent and important tasks. The use of such devices allows workers to perform heavy tasks and reduce the risk to their health when working in high-voltage or hazardous environments, for example, when laying tunnels.

Reducing crime and risks in transport is an important task. The use of facial recognition and remote identification technologies allows you to create complete security zones around key transport facilities. International airports are already using such approaches, including comprehensive video recording, the use of drones and a single information system that processes the data received and allows you to identify almost every person in the crowd of passengers. This not only reduces potential threats at transport facilities, but also helps to solve more mundane tasks, such as tracking unscrupulous passengers who can damage property and create problems.

Conclusion. The processes of robotization and implementation of automatic systems in the transport sector have significant potential to cover almost all aspects of it, including logistics and customer service. Digital technologies, in turn, provide the opportunity to create autonomous vehicles for various types of transport. At the moment, automation of the port infrastructure is already being observed, especially in the field of container handling, where terminals operate operating practically without human intervention. Thus, all components of the logistics chain, including the consolidation of information flows and control, can be automated using automated systems. Despite the fact that fully autonomous naval vessels are still in the distant future, it is already possible to talk about the potential of creating a "virtual logistician" - a program capable of organizing the work of transport hubs.

In the Republic of Uzbekistan, the processes of digitalization have not gone unnoticed by either state authorities or the private sector. The country is implementing a number of measures aimed at preparing the economy and society for the processes of digitalization. One such initiative is the "Strategy for the Development of the Information Society in the Republic of Uzbekistan", approved by the President of Uzbekistan Shavkat Mirziyoyev in January 2019, which recognizes digital technologies as an important factor for the global leadership of Uzbek companies. This strategy provides for specific measures aimed at the dissemination of digital technologies, such as regulatory regulation, training and reorganization of the education system, as well as the development of the scientific and technical sphere. The State also plays a role in facilitating the penetration of digital technologies, developing infrastructure and ensuring the information security of citizens. [7, p. 121]

In the process of digitalization of the economy, digital information platforms (DIP) play a significant role. They are designed to integrate all participants in the value chain, provide communication channels, distribution paths, and build a community of potential customers. EDS have such a scope of work that they can cover entire sectors of the economy. Examples of such digital platforms are

abundant in e-commerce. Moreover, it can be expected that such technologies will be increasingly used in the transport sector.

At the moment, digital platforms are already being used in the transport sector, although they are not yet as universal as electronic platforms. Logistics already uses specialized local digital platforms for planning the transportation process and organizing cooperation between various modes of transport and logistics centers. Digital platforms facilitate the coordination of cargo handling in warehouses and ensure effective communication with end users. In the transport sector, digital platforms combine all intermediary functions. With their help, end consumers can interact directly with suppliers, and the platform will provide them with the necessary tools to manage the movement of goods. In other words, this type of digital platform is able to integrate all logistics and other processes into a single system, connect consumers with manufacturers and take over the management of all additional functions.

Digitalization of the logistics sector is both a challenge and a challenge for its participants. The process of digitalization can lead to changes in the market that all its participants will face. One of the most serious challenges is the emergence of a market controlled by a single monopolist, known as the winner-takes-all model. This means that integration in each market segment reaches such a level that one large monopolist emerges. An example of such a monopolist in the e-commerce market is Amazon. The emergence of such a monopolist makes the rest of the market participants extremely dependent on his leadership. Similar processes can also be observed in the transport sector, where logistics companies are increasingly dependent on the e-commerce sector, such as online exchanges and online stores.

Most scientists dealing with this issue believe that in the future, the delivery of goods, including all types of goods, will be carried out directly from the warehouse belonging to the largest online store, the customer, bypassing the retail network. Traditional "convenience stores" will be replaced by pick-up points for pre-ordered goods. An important aspect of this process is that online stores will sell not only goods, but also delivery services. Thus, only those companies that will be integrated with the largest sales platforms will remain in the logistics services market. It is the largest participants in the e-commerce market that will determine who will remain in the market and what profit they will receive. At the same time, such companies may not even have their own physical assets.

In conclusion, we can say that digitalization is the main process in the transport sector among all manifestations of scientific and technological progress. It is happening faster than previous technological revolutions and is leading to profound transformations in the industry. The results of these transformations are difficult to predict, but two key components can be identified. On the one hand, the effective use of digital technologies in the transport sector determines the competitiveness of companies. Those who do not follow modern changes risk dropping out of the market. Digital innovations make it possible to increase efficiency, improve logistics process management, optimize delivery and provide a higher level of customer service. On the other hand, digitalization processes also

carry increased risks, both in terms of economic development and social progress. There are questions about the concentration of the market in the hands of several large players, about dependence on monopolists and data protection and privacy. It is necessary to develop appropriate legal and regulatory mechanisms to ensure fair competition, consumer protection and public safety.

In general, the digitalization of the logistics sector provides significant opportunities for the development and improvement of the industry, however, it requires attention to the problems associated with market concentration and risks in order to ensure sustainable and effective progress.

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INTERNATIONAL INVESTMENT POLICY: ECONOMIC AND LEGAL TRENDS

Abstract: *this study provides an in-depth analysis of investment policy within the context of global investment market trends. It explores the economic and legal principles of investment policy, domestic and international influencing factors, main objectives, tasks, and relevant legal documents, including UN treaties and agreements. The research also examines national and international legislation, mechanisms for promoting and protecting investments, and the roles of international organizations such as the World Bank, IMF, and OECD (World Investment Report 2024).*

Keywords: *foreign direct investment (FDI), international investment policy, economic principles, legal frameworks.*

In the current global economy, investment policy and its economic and legal foundations hold significant importance. International investment agreements, bilateral investment treaties (BITs), and other legal mechanisms are critical in creating a reliable environment for investors and strengthening economic cooperation between countries (Bilateral Investment Treaties). This article is a comprehensive study analyzing the economic and legal principles of international investment policy, trends in investment activities, the advantages and disadvantages of investments, and support mechanisms. It also details the roles of national legislation and international organizations (e.g., World Bank, IMF, OECD) and mechanisms for promoting and protecting investments (Investitsiyalarni himoya qilish).

Investment Market Development: Countries strengthen investment policies to attract foreign investments, enhance export potential, and diversify their economies. For instance, Nicaragua's new laws to protect investments have contributed to further economic growth (Investitsiyalarni himoya qilish). Prior studies have focused on various aspects of investment policy—economic, legal, and financial. For example, Nicaragua's 2015 laws, enacted through the ProNicaragua agency, aimed to enhance measures for promoting and protecting investments (Investitsiyalarni himoya qilish). Additionally, literature such as investment activity and policy presentations provides detailed insights into the principles of investment activities, collaboration with international investors, and the role of financial institutions (Investitsiya faoliyati).

Sources analyzing BITs and international investment agreements outline their core principles and regulations from the perspective of investment security and reliability. These sources describe mandatory legal norms, taxation, property,

capital transfers, and mechanisms for resolving investor-government disputes (Bilateral Investment Treaties). The Government Finance Officers Association (GFOA) and HIAS Foundation's guidelines are also recognized, with their policy statements targeting asset management, capital preservation, and income growth (Investment Policy - GFOA). Financial Risk Management: Investment policy is crucial for creating a reliable environment for investors, who aim to secure their capital, minimize risks, and achieve stable returns. Organizations like HIAS Foundation and GFOA outline principles for capital preservation, liquidity, and high returns (Investment Policy - GFOA).[6] Investment Objectives and Tasks: The primary task of investment policy is to support economic stability, develop production and export potential, and enhance economic prosperity across regions and sectors. Governments utilize taxes, subsidies, credit policies, and other economic mechanisms to implement investment policies (Investment Policy - GFOA). Legal Trends Legal mechanisms are as critical as economic factors in shaping investment policy. International investment agreements, BITs, and other legal documents provide reliable mechanisms for protecting investors' rights, ensuring property security, and resolving interstate disputes (Bilateral Investment Treaties).

International Investment Agreements (IIAs): These agreements regulate investments through treaties and protocols, ensuring investor safety and creating favorable conditions for interstate trade and investment exchanges. They allow disputes between investors and states to be resolved through international arbitration.

Table 1: Economic Principles Shaping International Investment Policy

Principle Name	Description	Application Areas
Investment Growth	Increasing foreign and dome investments	FDI, exports, industrial development
Risk Management	Safeguarding investors' capi	Financial markets, investme projects
Liquidity Assurance	Managing short- and long-te funds	Bank loans, state budget
Income Maximization	Maximizing investor returns	Enterprise profitability, inve funds
Sustainable Growth	Long-term economic growth country	Industrial development, exp policy

Legal Trends Legal mechanisms are as critical as economic factors in shaping investment policy. International investment agreements, BITs, and other legal

[6] Subedi, S. P. (2024). International investment law: reconciling policy and principle. Bloomsbury Publishing.

documents provide reliable mechanisms for protecting investors' rights, ensuring property security, and resolving interstate disputes (Bilateral Investment Treaties).[7]

International Investment Agreements (IIAs): These agreements regulate investments through treaties and protocols, ensuring investor safety and creating favorable conditions for interstate trade and investment exchanges. They allow disputes between investors and states to be resolved through international arbitration. Legal Security and Dispute Resolution: A key aspect for investors is the mechanism for quickly and fairly resolving disputes arising during investment activities. The International Centre for Settlement of Investment Disputes (ICSID) actively participates in resolving such disputes (Nizodan saqlanish). Legal Security and Dispute Resolution: A key aspect for investors is the mechanism for quickly and fairly resolving disputes arising during investment activities. The International Centre for Settlement of Investment Disputes (ICSID) actively participates in resolving such disputes (Nizodan saqlanish).

National and International Legislation Interaction Investment policy is significant not only internationally but also within national legislation. Countries align their investment policies with international treaty requirements. For example, Uzbekistan's 2011 agreement with China demonstrates the interplay between national and international legal mechanisms for promoting and protecting investments (19.04.2011). Similarly, investment cooperation between Uzbekistan and the UAE illustrates the level of commercial exchange and economic integration (O'zbekiston va BAA).[8]

Conclusion. This study thoroughly analyzed the economic and legal principles of investment policy, the interplay between national and international legislation, and practical case studies. Key conclusions include:

1. International investment policy significantly contributes to economic growth, with reforms enhancing investor confidence and economic stability.
2. Legal mechanisms, such as BITs and IIAs, are pivotal in protecting investor rights through fair and swift dispute resolution.
3. The interaction between national and international legislation improves the investment environment, requiring alignment with global standards.
4. Proper management of investment processes reduces risks and increases efficiency, with careful planning and execution positively impacting outcomes. Recommendations include updating investment policies, improving legal norms, aligning national legislation with international standards, managing investment processes comprehensively, and fostering international cooperation.

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THE ROLE OF GEOGRAPHIC INFORMATION SYSTEMS (GIS) IN LAND CADASTRE

Abstract. *This thesis delves into the crucial role that Geographic Information Systems (GIS) play in contemporary land cadastre systems. Traditionally, land cadastre, which entails a comprehensive registry of the boundaries and measurements of real estate, heavily relied on manual and paper-based records. However, the emergence and integration of GIS technology have brought about a revolutionary transformation in this field, offering a dynamic and efficient approach to recording, managing, and analyzing land-related data. The research investigates the historical evolution of land cadastre, the shift towards digital systems, and the specific benefits that GIS brings in terms of precision, accessibility, and decision-making.*

Key words*: Land cadastre, GIS technologies, land arrangement, and land registry.*

Introduction. Geographic Information Systems (GIS) have been developed for the purpose of capturing, storing, manipulating, analyzing, managing, and presenting spatial or geographic data. The incorporation of GIS technology into land cadastre systems has brought about a fundamental change in approach, enabling the digitization and automation of processes that were previously reliant on manual labor. This advancement in technology not only enhances the accuracy of land records, but also enhances the accessibility and usability of land data for a range of stakeholders, including government agencies, private sector organizations, and the wider public.

The role of Geographic Information Systems (GIS) in land cadastre extends far beyond the scope of simple data storage. It encompasses a diverse range of functionalities that greatly contribute to improved decision-making and policy formulation. By employing spatial analysis techniques, GIS facilitates the identification of patterns and relationships inherent within land data, thus offering invaluable insights that are essential for effective urban planning, environmental conservation, and disaster management initiatives. Moreover, the integration of GIS

with other advanced technologies like remote sensing and global positioning systems (GPS) bolsters the capacity of land cadastre systems to deliver up-to-date, precise, and all-encompassing information.

Main part. The objectives of this research are threefold:

to analyze the evolution and current state of land cadastre systems;

to evaluate the technical and functional contributions of GIS to these systems;

to propose strategies for optimizing the use of GIS in land management.

In doing so, this thesis aims to provide a comprehensive understanding of how GIS technology can be leveraged to enhance the efficiency, transparency, and sustainability of land cadastre systems.

If we examine the historical development of the geographic information system (GIS) within the context of land cadastre, one notable early instance of GIS utilization for land registration can be found in the land information system of Minnesota. Established in the mid-1960s, this system has proven to be highly efficient. Notably, it operates on a raster, with a significant raster size exceeding 0.16 km^2.

Experiments on the computerization of cadastral data and the establishment of a database were initiated at an early stage in Sweden and Austria. Institutions in these countries, as well as in England, France, and Germany, have demonstrated significant success in effectively adopting and utilizing new technologies.

Automated systems based on Geographic Information Systems (GIS) are increasingly being employed in the domain of land cadastre in the Russian Federation. This trend can be attributed to the stringent demands for data storage and processing within GIS. In this context, a range of software applications such as Arclnfo, Maplnfo, Intergraph, AutoCAD, as well as system packages like Panorama, GeoDraw/GeoGraph, and ObjectLand, are utilized for the execution of these tasks.

However, in many geographic information systems, there is a limitation regarding the ability to define relationships between objects at different levels. For instance, land parcels are unable to extend beyond the boundaries of their cadastral quarter. This kind of verification requires the utilization of all available methods, including the examination of supporting materials. When employing a GIS, it becomes imperative to acquire a comprehensive list of all land plots that are either fully or partially situated within a particular territorial zone. This is essential for inputting specific data on each land plot, a task that presents additional challenges. Consequently, the developers of such cadastral systems have gradually shifted towards using GIS solely for map-related tasks. The processing of specific data and the maintenance of database integrity are now performed using specialized software.

Currently, the organizations involved in the land cadastre of the Russian Federation utilize various geographical information systems such as Maplnfo, ObjectLand, Geopolis, GeoMedia, and SICAD/SD.

The application of GIS technologies enables the storage and documentation of information pertaining to land formations, encompassing both the objects

themselves and any subsequent alterations. Additionally, GIS technologies offer the capability to address numerous land management issues in a more expedient and effective manner.

GIS technologies in land management enable the utilization of contemporary electronic geodetic tools and global positioning systems (GPS), ensuring a constant access to the most dependable and current information. Furthermore, the implementation of specialized tools facilitates the analytical processing of data, enabling the tracking and management of various events, such as those pertaining to area pollution.

Nevertheless, when utilizing these technologies, it is imperative to consider the following factors when working with cadastral databases:

1. Ensure regular updates of the data after entering all the necessary information into the database;

2. Incorporate three-dimensional data for the efficient utilization of land and leverage relief data to enhance evaluation processes.

In order to effectively implement the aforementioned processes, the utilization of remote sensing data (RS) and photogrammetric processing procedures is elucidated, particularly for specific time intervals and large geographical areas. Through the application of this information, it becomes possible to determine the dimensions, configuration, and spatial positioning of objects based on the analysis of their images. Employing methods such as remote sensing for data acquisition facilitates the resolution of the following issues:

Creation of thematic maps of varying scales with the purpose of land use planning;

establishment of digital relief models;

conducting land inventory assessments;

monitoring land conditions and evaluating losses caused by natural disasters;

precise preparation of soil maps and settlement plans;

provision of operational support for digital databases;

forecasting profitability, and so forth.

The presence of various opportunities facilitates land managers in effectively and expeditiously arranging cadastral registration objects with utmost precision. Furthermore, the integration of Geographic Information Systems (GIS) guarantees the coherence and compatibility of different coordinate systems.

In the field of civil land surveying, Geographic Information System (GIS) technology is employed to work with cadastral maps, including duty maps (duty cadastral documents). The utilization of GIS in relation to civil contract documents encompasses various actions, which can be outlined as follows:

1. Preparation of the initial format of cadastral registration object plans;

2. Development of boundary plans for new cadastral registration objects based on land surveying data;

3. Examination of the conditions required for the formation of said objects;

4. Organization and printing of cadastral registration objects as legal documents;

5. Creation of a cadastral map that incorporates information on the presence, location, and boundaries of registration objects within the cadastral quarter, drawing from diverse sources;

6. Organization and printing of graphic documents pertaining to the subsection of the state register;

7. Compilation and printing of graphic documents for the cadastral plan of land plots;

8. Implementation of any necessary modifications to the results, such as registration of rights, boundary clarification, and transactions involving accounting objects;

9. Preparation of cadastral documents and production of thematic maps that provide generalized information about a specific area.

Significant efforts are currently being undertaken in the Republic of Uzbekistan in this particular field. The incorporation of geographic information systems (GIS) into the land cadastre system has been identified as a crucial stride towards the efficient administration of these land resources. The utilization of GIS technology has proven instrumental in the enhancement of land management practices in Uzbekistan, contributing to heightened effectiveness, precision, and accountability throughout the land management procedures.

The main stages of introducing GIS technology to the land cadastre of Uzbekistan can be outlined as follows:

1. Digitization of land parcel data: This involves the transition from paper records to digital formats, thereby facilitating easier data access and preventing loss or damage;

2. Development of a centralized database: A GIS-based centralized database is established to effectively store and manage land data;

3. Education and capacity building: It is crucial to provide the necessary training and skill development to land users to ensure their proficiency in utilizing GIS technology.

As a result of these efforts, several benefits and opportunities have emerged, including:

Enhanced mapping precision and spatial analysis capabilities offered by GIS technology, leading to a reduction in errors and ensuring consistency in land records.

The establishment of a transparent platform in the form of a centralized GIS-based land cadastre, enabling public and stakeholder access to land information.GIS facilitates comprehensive spatial analysis and planning, allowing for better land use management, zoning, and development planning;

Accurate GIS maps and data provide a clear representation of land boundaries and ownership, helping to resolve disputes quickly and fairly;

GIS integrates various datasets, including environmental data, enabling better decision-making for sustainable land and resource management.

GIS automates many aspects of land administration, streamlining processes such as land registration, transfer, and valuation, thus reducing processing times and administrative burdens, va boshqa ko’plab natijalarga erishilganligini misol qilib

keltirishimiz mumkin.

Conclusion. The transition from manual, paper-based records to digital, Geographic Information System (GIS)-based systems has greatly improved the precision and uniformity of land administration data. This shift has enabled the precise cartography of land parcels and the capability to conduct real-time computations.

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GLOBAL AND REGIONAL TRENDS IN CLIMATE CHANGE

Annotation: *This article analyzes global and regional trends in climate change, highlighting its negative consequences and solutions. In particular, the impact of climate change on soil and water resources in the Karakalpakstan region was considered.*

Keywords: *Climate change, global warming, water resources, drought, ecology, land reclamation.*

Today, climate change remains one of the most pressing problems facing humanity. Global warming, droughts, extreme weather events, and the melting of glaciers are among the negative consequences of this process [1]. Central Asia and the Aral Sea region are particularly vulnerable to climate change [2]. This article analyzes global and regional trends in climate change, its main problems, and ways to solve them.

The main goal of the article is to analyze current trends in climate change, assess its impact on the Aral Sea region, and identify ways to solve these problems.

The issue of climate change is being studied by many scientists around the world. The UN Intergovernmental Panel on Climate Change (IPCC) publishes reports annually, outlining global trends and forecasts[3]. Various scientific studies are also being conducted by organizations such as NASA, NOAA, and the World Bank[4]. In Central Asia and the Aral Sea region, the research of E. A. Chub, I. Abdurakhmanov, B. S. Kamilov**,** U. Salimov, S. Khodzhaev, V. A. Novikov plays an important role in studying these problems [5].

In recent decades, a 1.1°C increase in global temperature has been observed[6]. According to the IPCC, if greenhouse gas emissions are not reduced, global temperatures may rise by 3-4°C by 2100[7]. This increases the risk of rising sea levels, droughts, and floods.

From a regional perspective, the average annual temperature in Central Asian countries has increased by 1.5-2°C [8]. In the Republic of Karakalpakstan, drought and salinization processes are intensifying. This negatively affects agriculture, water resources, and public health.

Main problems of climate change

- Drought and water scarcity: Precipitation is decreasing in the region, and soil fertility is declining.

- Extreme weather events: A sharp rise in temperature increases the number of heat waves.

- Decrease in water resources: The water volume of major rivers, such as the Amu Darya and Syr Darya, is decreasing.

Soil salinization: The melioration status of irrigated areas is deteriorating.

The above-limit use of water resources can be seen in the following table (Table 1).

Table 1

Water intake in the Republic of Karakalpakstan in 2018-2020

№	Tumanlar nomi	2018 gidrologik yilda, mln.m3		shu jumladan				2019 gidrologik yilda, mln.m3		shu jumladan				2020 gidrologik yilda, mln.m3		shu jumladan			
				kuzgi-qishqi davrida		yozg‘i sug‘orish davrida				kuzgi-qishqi davrida		yozg‘i sug‘orish davrida				kuzgi-qishqi davrida		yozg‘i sug‘orish davrida	
		Limit	Amalda	Limit	Amalda	Limit	Amalda	Limit	Amalda	Limit	Amalda	Limit	Amalda	Limit	Amalda	Limit	Amalda	Limit	Amalda
1	Nukus sh.													31,66	33,16				
2	To‘rtko‘l	448,6	444,8	89,6	89,6	359,0	355,2	531,5	528,1	111,0	110,1	420,5	418,0	398,0	470,0	100,0	120,2	298,0	349,8
3	Beruniy	710,0	699,8	210,0	210,0	500,0	489,8	600,4	597,4	200,4	199,8	400,0	397,6	600,0	634,9	200,0	222,8	400,0	412,1
4	Ellikqal’a	475,7	471,0	95,7	95,7	380,0	375,3	530,7	528,1	113,2	113,0	417,5	415,1	408,0	472,5	100,0	117,2	308,0	355,3
5	Amudaryo	811,8	789,8	252,0	250,0	559,8	539,8	816,8	802,7	186,5	183,5	630,3	619,2	686,0	722,5	205,0	241,7	481,0	480,8
6	Xo‘jayli	349,9	333,9	62,2	59,2	287,7	274,7	317,5	312,1	64,5	63,5	253,0	248,6	304,0	312,3	70,0	69,0	234,0	243,3
7	Taxiatosh	113,6	107,0	27,8	25,2	85,8	81,8	98,0	93,1	17,0	15,9	81,0	77,2	90,0	131,0	25,0	30,9	65,0	100,1
8	Sho‘manoy	350,9	311,2	74,9	72,7	276,0	238,5	459,9	457,7	76,9	76,4	383,0	381,3	360,0	369,2	85,0	77,0	275,0	292,2
9	Qonliko‘l	295,4	284,8	55,4	51,6	240,0	233,2	377,4	373,8	59,4	58,7	318,0	315,1	388,0	372,3	70,0	66,0	318,0	306,3
10	Qo‘ng‘irot	311,9	302,0	61,9	59,6	250,0	242,4	479,9	463,7	72,9	71,6	407,0	392,1	392,0	415,1	70,0	80,9	322,0	334,2
11	Nukus	364,3	359,9	41,7	38,1	322,6	321,8	450,2	445,0	50,1	50,0	400,1	395,0	371,0	386,3	58,0	48,0	313,0	338,3
12	Kegeyli	427,2	419,6	67,2	62,8	360,0	356,8	614,6	608,2	92,1	91,9	522,5	516,3	422,4	495,7	95,0	110,0	327,4	385,7
13	Chimboy	329,5	300,0	49,5	48,0	280,0	252,0	606,9	606,0	77,9	77,7	529,0	528,3	423,6	442,1	85,0	104,0	338,6	338,1
14	Qorao‘zak	337,6	308,5	67,3	66,0	270,3	242,5	523,3	520,3	71,0	70,9	452,3	449,4	464,0	375,6	79,0	101,0	385,0	274,6
15	Taxtako‘pir	303,8	275,7	59,8	58,8	244,0	216,9	428,8	427,6	58,3	58,3	370,5	369,3	397,0	302,4	72,0	78,0	325,0	224,4
16	Mo‘ynoq	67,7	37,0	16,2	10,2	51,5	26,8	60,4	54,4	8,9	7,4	51,5	47,0	77,5	138,4	8,5	22,0	69,0	116,4
17	Bo‘zatov													84,0	223,7	10,0	53,1	74,0	170,6
Jami tumanlar		**5731,0**	**5465,4**	**1234,3**	**1199,8**	**4496,7**	**4265,6**	**6931,3**	**6848,6**	**1261,6**	**1250,0**	**5669,7**	**5598,6**	**5823,5**	**6263,6**	**1334,5**	**1541,4**	**4489,0**	**4722,2**

In recent years, the total irrigated land area of the Republic of Karakalpakstan is 514.627 thousand hectares, the area of non-saline lands is 152.045 thousand hectares (30%), the area of saline lands is 362.582 thousand hectares (70%). In terms of the level of salinity, the highest areas are the Muynak district - 94%, Bozatau district - 86%, Chimbay district - 77%, and the lowest areas are the city of Nukus - 100%, but the total area is small (2,193 thousand hectares). Takhiatash district - 73% saline, 39% moderately saline, Khojeyli district - 73% saline, 27% non-saline - this is a lower indicator compared to other districts.

The overall level of salinity did not change significantly, but strong salinity decreased, and moderate salinity increased. The most problematic areas for salinization remain the Muynak, Bozatau, and Chimbay districts. Measures to reduce salinity are yielding results, but this process requires a long-term approach. Improving the melioration state of soils, efficient use of water resources, and improving the crop rotation system will remain important factors in reducing salinity.

To mitigate the negative impacts of climate change, it is necessary to implement the following measures:

- Development of alternative energy sources: widespread introduction of solar and wind energy.
- Effective water resource management: Application of drip irrigation and water-saving technologies.
- Expansion of forests and green areas: combating desertification and ensuring environmental sustainability.
- Improvement of climate monitoring: Development of scientific research and monitoring systems.

Conclusion. Climate change is a pressing issue at the global and regional levels, and its impact is growing. Central Asia and the Karakalpakstan region, in particular, are suffering serious damage from this process. Therefore, based on scientific research, it is important to strengthen alternative energy, water resource management, and environmental measures. Only then can we achieve a reduction in the negative consequences of this global problem.

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XALQARO AMALLIYOTDA SOLIQQA TORTISHNING SHEDULYAR TIZIMINING MOHIYATI VA UNING O‘ZIGA XOS XUSUSIYATLARI

Annotatsiya. *Mazkur maqolada xalqaro amaliyotda soliqqa tortishni shedulyar tizimining mohiyati va uning o‘ziga xos xususiyatlari yoritib berilgan. Maqolada mamlakatimiz soliq tizimiga soliqqa tortishning shedulyar tizimining ayrim elementlarin joriy etish yuzasidan amaliy tavsiyalar ishlab chiqilgan.*

Калит сўзлар*: Soliqlar, soliqqa tortish, ish haqi, ko‘chmas mulk, dividend, moliya bozori.*

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THE ESSENCE AND FEATURES OF THE SCHEDULING TAX SYSTEM IN INTERNATIONAL PRACTICE

Abstract. *This article examines the essence and features of the schedular taxation system in international practice. The article develops practical recommendations for the implementation of some elements of the schedular taxation system in our country.*

Key words: *Taxes, taxation, wages, real estate, dividend, financial market.*

Kirish

O‘zbekiston Respublikasida oxirgi yillar davomida olib borilayotgan iqtisodiy islohotlarga soliq tizimidagi ayrim muammolar o‘zining salbiy ta’sirini ko‘rsatib kelayotgan edi. Ushbu salbiy holatni bartaraf etish uchun O‘zbekiston Respublikasi Prezidentining 2017 yil 7 fevraldagi "O‘zbekiston Respublikasini yanada rivojlantirish bo‘yicha Harakatlar strategiyasi to‘g‘risida”gi PF-4947-sonli

farmonida soliq yukini kamaytirish va soliqqa tortish tizimini soddalashtirish siyosatini davom ettirish, soliq ma'muriyatchiligini takomillashtirish va tegishli rag'batlantiruvchi choralarni kengaytirish ko'zda tutilgan.[1] Mamlakatda tadbirkorlikni rivojlantirish va xorijiy investitsiyalarni jalb qilish uchun soliq yukini izchillik bilan kamaytirish va qulay shart-sharoitlarni yaratishni ta'minlaydigan soliq tizimi shakllantirilgan edi. Shu bilan birga, soliq ma'muriyatchiligi sohasida, shu jumladan soliqlar va boshqa majburiy to'lovlarni yig'ish, soliq solinadigan bazani kengaytirish va soliq to'lovchilarning huquqiy madaniyatini oshirishda muayyan muammolarning mavjudligi mamlakatning ijtimoiy-iqtisodiy rivojlanishi dasturlarini moliyalashtirishning barqaror manbalarini ta'minlashga salbiy ta'sir ko'rsatib kelmoqda edi. Mazkur kamchiliklarni ijobiy hal etish uchun O'zbekiston Respublikasi Prezidentining 2017 yil 18 iyuldagi "Soliq ma'muriyatchiligini tubdan takomillashtirish, soliqlar va boshqa majburiy to'lovlarning yig'iluvchanligini oshirish chora-tadbirlari to'g'risida"gi PF-5116-sonli farmonida soliq yukini kamaytirish va soliqqa tortish tizimini soddalashtirish siyosatini davom ettirish, soliq ma'muriyatchiligini takomillashtirish va tegishli rag'batlantiruvchi choralarni kengaytirish ko'zda tutilgan.[2] O'zbekiston Respublikasining 2019 yil 30 dekabrda qabul qilingan yangi taxrirdagi "O'zbekiston Respublikasining Soliq Kodeksi"ga muvofiq amaldagi soliq tizimiga ko'plab yangiliklar amaliyotga joriy etilmoqda. Jumladan, avval amal qilgan 13 ta soliqlar unifikatsiya qilinib, ularning turlari 13 tadan 9 taga kamaytirildi. Soliqlarni to'lash muddatini uzaytirish yoki bo'lib-bo'lib to'lashga ruxsat berish bo'yicha yengillashtirilgan mexanizmlar kiritildi.

O'zbekiston Respublikasi Prezidenti Shavkat Mirziyoev mamlakatimizdagi soliq siyosatiga o'zining diqqat-e'tiborini qaratib "To'rtinchidan, fuqarolarimiz soliqdan qochish emas, uni vaqtida to'lashdan manfaatdor bo'lishi kerak. 2019 yildan boshlab joriy etilayotgan yangi soliq konsepsiyasining eng asosiy g'oyasi soliq yukini kamaytirish, sodda va barqaror soliq tizimini qo'llashni ko'zda tutadi. Shu orqali iqtisodiyotimiz raqobatbardoshligini oshirish, tadbirkor va investorlar uchun har tomonlama qulay muhit yaratishga erishish mumkin. Afsuski, yalpi ichki mahsulotda "yashirin" iqtisodiyotning ulushi katta bo'lib, bu mamlakat rivojiga salbiy ta'sir ko'rsatmoqda. Soliq yukini kamaytirish, biznes yuritish uchun yanada qulay sharoitlar yaratish "yashirin" iqtisodiyotga barham berishning yagona yo'lidir. Shuning uchun bu borada ta'sirchan choralarni nazarda tutadigan alohida dastur ishlab chiqishimiz zarur"[9][3] deb alohida ta'kidlagan. Keyingi yillarda qo'shni mamlakatimizda fuqarolarning ayrim toifalari uchun "hashamat uchun soliq" joriy qilish bo'yicha amaliy ishlar olib borilmoqda. Respublikamizda ham fuqarolarning ayrim toifalarining daromadlarini soliqqa tortish mexanizmiga o'zgartirishlar kiritish yuzasidan takliflar kiritilgan. Mamlakatimizda soliqlar va soliqqa tortish muammosini o'rganish bilan birga, iqtisodiyoti taraqqiy topgan va rivojlanayotgan mamlakatlarning soliq tizimidagi salbiy holatlarning yuzaga chiqish sabablarini tahlil etish hamda ularda soliq tizimidagi kamchiliklarni bartaraf etish bo'yicha amalga oshirayotgan chora-tadbirlarni o'rganish, bizga, ushbu

[9] O'zbekiston Respublikasi Prezidenti Sh.M.Mirziyoevning Oliy Majlisga murojaatnomasi.-T: "O'zbekiston". 2019.

sohada kelajakda yo‘l qo‘yilishi mumkin bo‘lgan xatolarni oldini olish imkoniyatini yaratadi.

Adabiyotlar sharhi

Xalqaro amaliyotda iqtisodiy adabiyotlarda yetakchi iqtisodchi olimlar xar bir davlatning byudjet tizimining asosiy bo‘g‘ini bo‘lgan soliqlarning mohiyati, ularning xususiyatlari, ularni tartibga solish hamda boshqarish muammolariga katta e’tibor qaratib kelishgan va hozirda ham e’tibor bermoqdalar. Xalqaro amaliyotda iqtisodiy ta’limotda Angliyalik buyuk shotland iqtisodchisi Adam Smit (1723-1790 yy) alohida o‘rin tutadi. [4] Xorijiy iqtisodchilardan Deborax Schanz [5], Rossiyalik yetuk iqtisodchilar iqtisodiyot fanlari doktori, akademik D.G.Chernik [6] va iqtisodiyot fanlari doktori, professor N.V. Milyakovlarning [7] ilmiy izlanishlarida soliqlar va soliqqa tortishning mohiyati va uning xususiyatlari keng ochib berilgan. O‘zbekistonlik iqtisodchi olimlar iqtisodiyot fanlari doktorlari, professorlar A.Vaxobov, A.Jo‘raev [8], T.S. Malikov, P.Jalilovlarning [9] ilmiy izlanishlarida O‘zbekistonda soliqlarning mohiyati, turlari, soliqqa tortish tamoyillarining mohiyati va uning xususiyatlari yoritib berilgan.

Adam Smit 1776 yilda “Xalqlar boyligining tabiati va sabablari to‘g‘risidagi izlanishlar” (“*Issledovanie o prirode i prichinax bogatstva narodov*”) deb nomlangan kitobini chop etdi. Olim aynan mazkur kitobda u mehnat unumdorligi va unumsiz bo‘lgan mehnat unumdorligiga asosan davlat moliyasining mohiyati bo‘yicha tavsiyalar ishlab chiqdi. Shuni alohida ta’kidlash lozimki, mazkur kitob Adam Smitga “iqtisodiyot otasi” yoki “moliya fanining asoschisi” degan unvonini berdi. Siyosiy iqtisodning klassik maktabining asoschisi hisoblangan Adam Smitning asosiy g‘oyasi millatning boyligi milliy iqtisodiyotning barcha tarmoqlarida (fiziokratlar tomonidan ilgari surilgan faqatgina qishloq xo‘jaligida emas) unumli mehnat unumdorligi orqali yaratiladi. Adam Smit moddiy ishlab chiqarishning istalgan sohasiga solingan kapitalni unumli kapital deb hisoblagan. Kapitalni dehqonchilikda qo‘llanish masalasida u mehnatgina emas, balki yerning o‘zi, tabiat ham qiymat yaratadi deb ta’kidlagan. Jamiyatning barcha a’zolari o‘zlariga tegishli daromadlarini yaratilgan milliy boylikka qo‘shgan hissasiga qarab oladi. Shuning uchun millatlar boyligi jamiyatda unumli mehnat unumdorligini oshirish orqali yaratiladi va ortib boradi.

Adam Smit o‘z asarida soliqlar nazariyasiga juda katta e’tibor bergan. Soliqlar to‘g‘risida uning “dunyoda inson ikki narsadan, birinchisi o‘limdan va ikkinchisi soliqdan qochib qutula olmaydi” degan dunyoqarashini dunyoning barcha iqtisodchilari yaxshi bilishadi. Lekin shunga qaramay A.Smit o‘z asarida soliqqa tortishni tashkil etishda to‘rtta asosiy tamoyillarni ishlab chiqqan:

- soliqlar fuqarolarning qobiliyatlari va moliyaviy ahvoliga asosan to‘lanishi lozim;
- soliqlarning miqdorlari va ularning to‘lash muddatlari aniq belgilangan bo‘lishi kerak;
- soliqlarni undirish muddatlari soliq to‘lovchilar uchun qulay bo‘lishi kerak;

- soliqlarni undirishda minimal xarajatlar ta’minlanishi lozim.

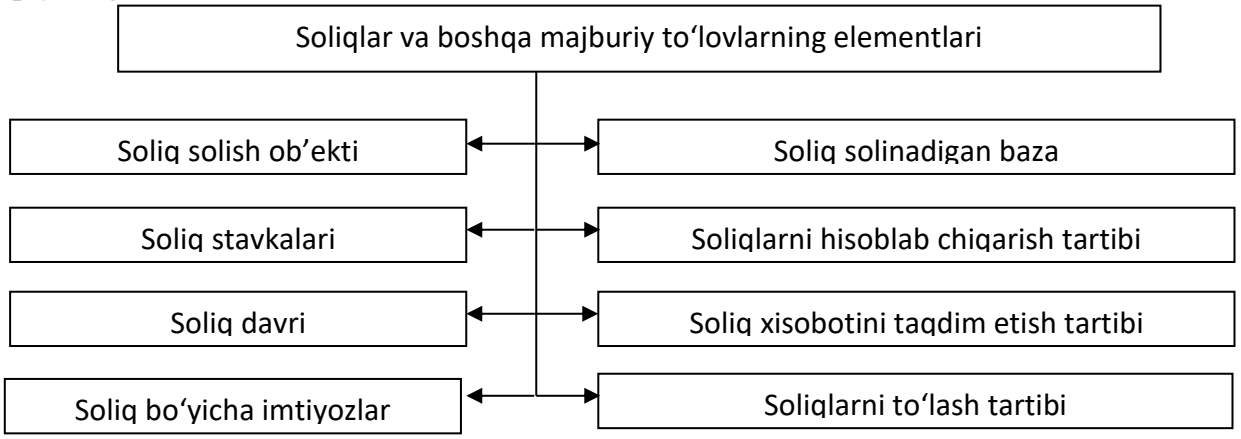
Adam Smit ilk bor soliqqa tortish tamoyillarini ko‘rsatib berdi, soliqlarni ahamiyatini yoritib, ularni davlatga to‘lash qullik emas, balki erkinlik alomati ekanligini asoslab berdi.[4] U jamiyatda amal qilayotgan soliqlarni (bilvosita, bevosita va ish xaqiga daromad soliqlari) jamiyatning iqtisodiy o‘sishiga ta’siri nuqtai nazaridan tahlil etgan hamda ularga baho bergan.

Tadqiqot metodologiyasi

Tadqiqot olib borish va natijalarni asoslash maqsadida mantiqiy mushohada, adabiyotlarni tanqidiy o‘rganish, taqqoslash, tizimli tahlil va iqtisodiy tahlil usullaridan foydalanildi. Maqolaning uslubiy asosi sifatida xorijiy va mahalliy iqtisodchi olimlarning adabiyotlari va maqolalari tahlil etilgan. Xozirda mamlakatimizda soliq tizimida olib borilayotgan faoliyatlarni tahlil etishda O‘zbekiston Respublikasi Davlat Soliq Qo‘mitasining rasmiy saytidagi ma’lumotlaridan foydalanildi.

Tahlil va natijalar muhokamasi

Soliq tizimining dolzarbligi, avvalo, uni tashkil etadigan va boshqaradigan davlat tuzilmalariga bog‘liq. Soliq davlatning o‘z maqsad va vazifalarini bajarish uchun foydalanadigan iqtisodiy quroldir, demak soliqning mohiyati va vazifalarini aniqlashda davlat faoliyatidan kelib chiqish lozimdir. Xalqaro amaliyotda soliq yoki boshqa majburiy to‘lov mamlakatdagi soliq to‘g‘risidagi qonun xujjatlarida soliq to‘lovchilar (yuridik va jismoniy shaxslar), shuningdek ushbu soliq yoki boshqa majburiy to‘lovni xisoblab chiqarish va to‘lash uchun zarur elementlar qonunan belgilab qo‘yilgan taqdirdagina belgilangan deb xisoblanadi. O‘zbekiston Respublikasida soliq to‘lovchilar va soliqlar yoki boshqa majburiy to‘lovlarni hisoblab chiqarish va to‘lashlari uchun zarur elementlar belgilab qo‘yilgan. Mamlakatimizda soliqlar va boshqa majburiy to‘lovlarning elementlarini quyidagi rasmda keltiramiz.



1-rasm. Soliqlar va boshqa majburiy to‘lovlarning elementlari tarkibi[10]

Soliq kodeksida soliq yoki boshqa majburiy to‘lov belgilanayotganda soliq to‘g‘risidagi qonun hujjatlarida soliq imtiyozlari, shuningdek, ularning soliq to‘lovchi tomonidan qo‘llanilishi uchun asosler nazarda tutilgan. Amaldagi

[10] Расм муаллиф томонидан тайёрланган

qonunchilikka asosan soliq to‘lovchilar, soliqlar va boshqa majburiy to‘lovchilarning elementlari har bir soliq yoki boshqa majburiy to‘lovga tatbiqan belgilanadi.

Soliqlar va amaldagi boshqa majburiy to‘lovlarni elementlariga quyidagilar kiradi:

1. Soliq solish ob’ekti. Soliq solish ob’ekti soliq to‘lovchida soliq yoki boshqa majburiy to‘lov hisoblab chiqarilishi va to‘lanishi yuzasidan majburiyat keltirib chiqaruvchi mol-mulk, harakat va xarajat natijasidir;
2. Soliq solinadigan baza. Soliq solinadigan baza soliq solish ob’ektining soliq yoki boshqa majburiy to‘lovning stavkasi tatbiqan belgilangan ko‘rsatkichlardagi qiymat, miqdor, fizik va boshqa tavsiflarini o‘zida ifodalaydi. Masalan, soliq solish ob’ekti yer bo‘lsa soliq solish bazasi gektar (sotix) hisoblanadi;
3. Soliq stavkasi. Soliq stavkasi soliq solinadigan bazaning o‘lchov birligiga nisbatan hisoblanadigan foizlardagi yoki mutlaq summadagi miqdorni ifodalaydi;
4. Soliqlarni hisoblab chiqarish tartibi. Soliq va boshqa majburiy to‘lovni hisoblab chiqarish tartibi soliq davri uchun soliq solinadigan bazadan, stavkadan, shuningdek imtiyozlar mavjud bo‘lsa, shu imtiyozlardan kelib chiqib, soliq va boshqa majburiy to‘lov summasini hisoblash qoidalarini belgilaydi. Soliq va boshqa majburiy to‘lov summasini hisoblab chiqarish soliq to‘lovchi tomonidan mustaqil ravishda amalga oshiriladi.
5. Soliq davri. Soliq davri u tugaganidan keyin soliq solinadigan baza aniqlanadigan hamda soliq yoki boshqa majburiy to‘lov summa hisoblab chiqariladigan davrdir. Soliq davri bir necha hisobot davriga bo‘linishi mumkin bo‘lib, ularning yakunlari bo‘yicha hisob-kitoblarni taqdim etish hamda soliqlar va boshqa majburiy to‘lovlarning to‘lanishi lozim bo‘lgan summalarni to‘lash majburiyati yuzaga keladi.

Shuni alohida ta’kidlash lozimki, dunyodagi ko‘plab mamlakatlarda, byudjet-soliq davri turlicha. Masalan GFR, Fransiya, Italiya, Ispaniya, Rossiya, shu jumladan O‘zbekistonda byudjet-soliq davri kadendar yiliga mos keladi, ya’ni 1 yanvardan boshlanib 31 dekabrda tugaydi. Buyuk Britaniya, Yaponiya, Kanadada byudjet-soliq davri 1 apreldan boshlanib 31 martda tugaydi. Shvesiya, Norvegiyada esa 1 iyuldan boshlanib, 30 iyunda tugaydi. AQShda esa byudjet-soliq davri 1 oktyabrdan boshlanib 30 sentyabrda tugaydi. Ushbu holat eng avvalo, har bir mamlakatdagi tarixiy sabablar, an’analar va eng asosiysi ulardan qonun chiqaruvchi organlarning sessiyalarini chiqarish muddatlari bilan bevosita bog‘liqdir.

Dunyoning barcha davlatlarida qonunchiligida soliq to‘lovchilarning majburiyatlari qonunan belgilab qo‘yilgan. Ularning eng asosiysi bo‘lib, bu soliq to‘lovchilar tomonidan o‘z soliq majburiyatlarini o‘z vaqtida va to‘liq hajmda bajarishi hisoblanadi. Fuqarolarni daromadlarini soliqqa tortishning shakllaridan biri bo‘lib soliqqa tortishning shedulyar tizimi hisoblanadi. Soliqqa tortishning shedulyar tizimi bu fuqarolar tomonidan daromadlarining manbalariga asosan daromad solig‘ini bo‘lib-bo‘lib (“shedula”) to‘lashlik hisoblanadi.

Soliqqa tortishning shedulyar tizimi XIX asrning o‘rtalarida Buyuk Britaniyada 1973 yilgacha amal qilgan daromadlarni soliqqa tortishni takomillashuvi natijasida yuzaga keldi. Soliqqa tortishning shedulyar tizimining mohiyati soliq to‘lovchi fuqarolarning barcha daromadlari topilgan manbaiga asosan qismlarga (“shedula”) ajratiladi va har bir qismga ajratilgan daromad yakka tartibda daromad solig‘iga tortiladi. Buyuk Britaniya soliq qonunchiligiga asosan soliq to‘lovchi fuqarolarning barcha daromadlari asosan 5 (beshta) shedulaga ajratilgan va ular o‘zlarining boshlang‘ich xarflari lotin alfaviti bo‘yicha belgilangan. Quyida biz shedullarning nomlanishini keltiramiz:

A – ko‘chmas mulkdan keladigan daromadlar;

V – o‘rmonlardan tijorat maqsadida foydalanganlik uchun olingan daromadlar;

S – davlat qimmatli qog‘ozlari bo‘yicha olingan daromadlar;

D – savdo va sanoatdan foyda, erkin kasb-hunardan daromad, chet ellardan olingan foyda;

Ye – mehnatdan olingan foyda, ish haqi, pensiyalar.[5]

1973 yilda Buyuk Britaniya Umumiy Bozorga a’zo bo‘lib kirdi. Yevropa Iqtisodiy Ittifoqining talablariga asosan Buyuk Britaniya boshqa a’zo mamlakatlardagi mavjud soliq tizimga moslashuvni amalga oshirish maqsadida soliqqa tortishning global tizimiga o‘tishni boshladi. Shuni alohida ta’kidlash lozimki, Buyuk Britaniya 1973 yildan keyin ham mavjud shedula tizimini saqlab qolgan holda, unga bir qator soliqlar bo‘yicha chegirmalarni joriy etdi. Buning natijasida, Buyuk Britaniyada fuqarolarning daromadlarini soliqqa tortishda shedulyar-global tizimi shakllandi. Ushbu tizimga asosan, fuqarolarning daromadlari avval manbailariga asosan shedula asosida soliqqa tortiladi va so‘ngra global soliqqa tortish maqsadida umumlashtiriladi. 1976 yilda Buyuk Britaniyada soliqqa tortishning shedulyar tizimida, yangi shedula, ya’ni F kiritiladi. Ushbu shedula asosida Britaniya kompaniyalaridan olingan dividendlar soliqqa tortiladigan bo‘ldi. Yevropa Ittifoqiga a’zo mamlakatlarning talabiga asosan, 1988 yilda tizimda V- shedula va 1997 yilda S shedula bekor qilindi. Buning natijasida fuqarolarning V va S shedula asosida oladigan daromadlari qolgan boshqa shedulalar tarkibiga kiritildi.Lekin Buyuk Britaniya 2021 yildan boshlab Yevropa Ittifoqidan chiqdi va o‘z hududida soliqqa tortishning shedulyar tizimini qayta tiklamoqda.

Hozirgi vaqtda, soliqqa tortishning shedulyar tizimi Angliya va avval unga vassal bo‘lgan mamlakatlar Shotlandiya, Uels va Shimoliy Irlandiyada saqlanib qolgan. Ushbu tizimning ayrim elementlari dunyodagi taraqqiy topgan mamlakatlarida (Fransiya, Germaniya va boshqalar) ham fuqarolarning daromadlarini soliqqa tortishda keng qo‘llanilmoqda. Soliqqa tortishni shedulyar tizimning ayrim elementlari O‘zbekiston uchun ham xosdir. Masalan, keyingi yillarda, mamlakatimiz fuqarolari daromadlari bo‘yicha yillik deklaratsiyalarini to‘ldirishlarida o‘zlarining ish haqi, mukofatlardan tashqari, o‘zlariga tegishli uy-joylarini, avtomashinalarni ijaraga berishdan oladigan daromadlarini va boshqa daromadlarini ham hisobga olishlari belgilab qo‘yilgan.

Xulosa va takliflar

Yuqoridagilardan xulosa qilish mumkinki, insoniyatga soliq nazariyalarning daholari hisoblanadigan Adam Smit va David Rikardolarni yetishtirib bergan Angliyada fuqarolarni daromadlarini soliqqa tortish tizimi juda yuksak darajada va ipidan-ignasigacha tashkil etilgan. Tadqiqotlar shundan daloalt beradiki, Buyuk Britaniyada soliqqa tortishni shedulyar tizimining bexato faoliyat yuritishining asosi bo‘lib aholining soliq savodxonligini yuqori darajada ekanligi hisoblanadi. Agarda biz bu holatni O‘zbekistonga taqqolasak bu sohadagi o‘z yechimini kutayotgan ko‘plab muammolar borligini guvohi bo‘lamiz. Mamlakatimizda aholi farovonligini oshirishni ta’minlash maqsadida ularga bir qator soliq imtiyozlari berilgan va ular hozirda ham saqlab qolingan. Buning natijasida, respublikamizda aholi turmush darajasini o‘sishiga erishilmoqda. Milliy iqtisodiyotimiz raqobatbardoshligini oshirish, tadbirkor va investorlar uchun har tomonlama qulay muhit yaratish maqsadida ularga keng miqyosda soliq imtiyozlari berilgan. Lekin so‘nggi yillarda respublikamizda aholini “soliqdan qochish” holatlari ko‘p kuzatilmoqda. O‘zbekistonda fuqarolar va tadbirkorlar o‘rtasida o‘z faoliyatiga tegishli bo‘lmagan soliq imtiyozlaridan o‘z maqsadlari uchun foydalanish orqali soliqdan qochish holatlari tez-tez uchrab turibdi.

Bizning fikrimizcha, mamlakatimizda soliqdan qochish holatlarini oldini olish maqsadida mutassadi tashkilotlar tomonidan aholini moliya-soliq savodxonligini oshirish bo‘yicha keng qamrovli va maqsadli ishlarni olib borish lozim. Respublikamidagi ommaviy axborot vositalari yordamida soliqlarning mohiyati, ularni to‘lash tartiblari, soliq imtiyozlari, to‘lanmagan soliqlar bo‘yicha javobgarliklar to‘g‘risida qisqa, sodda va tushunarli kliplarni aholining keng qatlamiga targ‘ibotni amalga oshirish lozim. Ushbu yo‘nalishda nafaqat moliya-soliq organlari balki oliy o‘quv muassasalari, savdo-sanoat palatasi, tadbirkor ayollar uyushmasi kabi manfaatdor tomonlarni o‘zaro hamkorlikda ishlashi orqaligina aholining keng qatlamini moliya-soliq savodxonligini oshirishga erishish mumkin bo‘ladi deb hisoblaymiz.

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ORGANIZM FUNKSIYALARINI BOSHQARILISHIDA AVTONOM NERV TIZIMINING O'RNI

Annotatsiya *Ushbu maqolada avtonom nerv tizimining (ANT) fiziologik asoslari, uning tuzilishi, funksional bo'linmalari va organizmdagi ahamiyati ilmiy asosda tahlil qilinadi. ANT inson organizmida vegetativ funksiyalarni boshqaruvchi muhim tizim bo'lib, yurak-qon tomir, nafas, ovqat hazm qilish, ichki sekretsiya bezlari faoliyatiga ta'sir ko'rsatadi. Maqolada ANTning ikki asosiy bo'limi – simpatik va parasimpatik tizimlar fiziologiyasi, ularning o'zaro aloqasi, shuningdek, ularning turli patofiziologik holatlardagi roli batafsil yoritilgan. Fiziologik regulyatsiya mexanizmlari, reflektor yoylar va neyrotransmitterlar ishtiroki asosida ANTning tashqi va ichki muhitga moslashuvchanligi ko'rsatib beriladi.*

Kalit so'zlar: *Avtonom nerv tizimi, simpatik bo'lim, parasimpatik bo'lim, vegetativ regulyatsiya, neyrotransmitter, fiziologiya, reflektor yoy, gomeostaz.*

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THE ROLE OF THE AUTONOMIC NERVOUSSSYSTEM IN THER REGULATION OF BODY FUNCTIONS

Annotation *This article analyzes the physiological foundations of the autonomic nervous system (ANS), its structure, functional divisions and significance in the body on a scientific basis. ANS is an important system that controls vegetative functions in the human body, affecting the activity of the cardiovascular, respiratory, digestive, and endocrine glands. The article discusses in detail the physiology of the two main divisions of the ANS - the sympathetic and parasympathetic systems, their interaction, as well as their role in various pathophysiological conditions. Based on the participation of physiological*

regulation mechanisms, reflex arcs and neurotransmitters, the adaptability of the ANS to the external and internal environment is shown.

Keywords:*Autonomic nervous system, sympathetic division, parasympathetic division, vegetative regulation, neurotransmitter, physiology, reflex arc, homeostasis.*

Kirish: Inson organizmida ichki muhit barqarorligini ta’minlovchi eng muhim tizimlardan biri bu – avtonom (vegetativ) nerv tizimidir. Bu tizim ongli nazoratdan mustaqil ravishda faoliyat yuritib, yurak urishi, qon bosimi, nafas olish, ovqat hazm qilish, tana harorati, ichki sekretsiya bezlari faoliyati kabi ko‘plab hayotiy muhim funksiyalarni boshqaradi. Avtonom nerv tizimi markaziy nerv tizimining tarkibiy qismi bo‘lib, u orqali organizmning ichki muhitga va tashqi muhit o‘zgarishlariga javob reaksiyalari shakllanadi. Avtonom nerv tizimi ikki asosiy bo‘limga — simpatik va parasimpatik bo‘limlarga bo‘linadi. Har ikki bo‘lim o‘zaro qarama-qarshi, lekin muvofiqlashgan tarzda ishlaydi. Masalan, simpatik bo‘lim organizmni stressga tayyor holatga keltirsa, parasimpatik bo‘lim tinchlik holatini ta’minlaydi. Bu tizimning har bir elementi o‘zaro bog‘liq bo‘lib, reflektor yoylar, markaziy va periferik nerv tuzilmalari orqali o‘z vazifasini bajaradi.

Ishning maqsadi: Organizm funksiyalarini boshqarilishida avtonom nerv tizimining o’rnini o’rganish.

Tadqiqotning material va metodi: Bu tadqiqotdan ANT ning biologik, kimyoviy, fizik xususiyatlari va uning ta’sir ettish prinspi, tashqi muhitdan keladigan omillarga javob reaksiyalari, parasimpatik va simpatik nerv tizimi xususiyatlari ularni o’rganish davomida bir nechta organizmlar ustida: kuzatish, statsionar tekshirishlar olib borish EKG, KT, MRT,EMG, ERG, EGG orqali tekshirishlar o’tkazilayotgan bemorlarda ro’y beradigan o’zgarishlarni o’rganish va ularni bir-biriga nisbatan taqqoslash o’tkazish va xulosaga kelish.

Olingan natijalar:

Avtonom nerv tizimi (ANT), ba’zan vegetativ nerv tizimi deb ham ataladi, organizmning ichki muhitini nazorat qiluvchi va gomeostazni saqlovchi muhim tuzilma hisoblanadi. ANT markaziy va periferik nerv tizimining tarkibiy qismi bo‘lib, u sezgi organlaridan kelayotgan afferent (kiruvchi) signallarni qabul qiladi, ularni markaziy nerv tizimida tahlil qiladi va efferent (chiqayotgan) javob signallarini ichki organlarga uzatadi.

Avtonom nerv tizimi ongli faoliyatdan mustaqil tarzda ishlaydi, ya’ni u odamning ixtiyoriy nazoratidan chetda bo‘lgan funksiyalarni boshqaradi. Bu tizim yurak urish tezligi, qon tomirlarning torayishi yoki kengayishi, ovqat hazm qilish tizimi harakatlari, ter bezlarining ishlashi, qorinchalar harorati, ko‘z qorachig‘ining kengayishi yoki torayishini nazorat qiladi.

Strukturaviy jihatdan ANT uchta asosiy komponentdan iborat:

1. Afferent neyronlar – ichki organlardan kelayotgan ma’lumotlarni markaziy nerv tizimiga yetkazadi.

2. Markaziy integratsion strukturalar – bosh miya va orqa miya darajasida joylashgan bo‘lib, ma’lumotlarni qayta ishlaydi.

3. Efferent neyronlar – javob signalini ichki organlarga yetkazadi.

Efferent yo‘llar esa ikki bosqichli bo‘lib, preganglionar va postganglionar neyronlardan tashkil topgan. Ular orasidagi sinapslarda turli kimyoviy moddalar – neyrotransmitterlar vositasida signal uzatiladi.

beradi.

Avtonom nerv tizimi ikki asosiy bo‘limga bo‘linadi: simpatik va parasimpatik tizimlar. Ushbu tizimlar o‘zaro qarama-qarshi, ammo organizmning ichki muhitini barqarorlashtirish uchun bir-biri bilan muvofiqlashgan tarzda faoliyat yuritadi.

Simpatik tizim organizmni stressli vaziyatlarga tayyorlashga xizmat qiladi. U "jang yoki qochish" (fight or flight) reaktsiyasini faollashtiradi. Simpatik tizimning asosiy vazifasi – organizmni hayotiy zaruratlar uchun tezda tayyorlash va atrof-muhitdagi o‘zgarishlarga javob berishdir. Masalan, xavfli vaziyatda yoki jismoniy zo‘riqish paytida simpatik tizim yurak urish tezligini oshiradi, qon tomirlarini toraytiradi, nafas olishni tezlashtiradi va mushaklarni kuchaytiradi.

Simpatik tizimning efferent neyronlari markaziy nerv tizimidan (bosh miya va orqa miyada joylashgan) periferik tizimga uzatiladi. Simpatik bo‘limda neyrotransmitter sifatida norepinefrin ishlatiladi. Norepinefrinning organizmdagi ta’siri nafaqat yurak-qon tomir tizimiga, balki metabolizm, ichki sekretsiya bezlari va ovqat hazm qilish tizimlariga ham ta’sir qiladi.

Parasimpatik tizim esa organizmni tinchlantiradi va normal holatga qaytarishga yordam beradi. U "dam olish va ovqat hazm qilish" (rest and digest) reaksiyalarini faollashtiradi. Parasimpatik tizimning faoliyatining asosiy maqsadi – organizmni quvvat olish, hazm qilish va dam olish holatiga keltirishdir. Misol uchun, parasimpatik tizim yurak urish tezligini kamaytiradi, qon tomirlarini kengaytiradi, nafas olishni sekinlashtiradi va ovqat hazm qilish jarayonini rag‘batlantiradi.

Parasimpatik tizimda asosiy neyrotransmitter sifatida atsetilxolin ishlatiladi. Atsetilxolinning ta’siri, ayniqsa, yurak va ichki organlar faoliyatiga qaratilgan bo‘lib, o‘ta tez yurak urishini sekinlashtiradi, qon bosimini pasaytiradi vametabolikjarayonlarni normallashtiradi.

Simpatik va parasimpatik tizimlar o‘rtasidagi o‘zaro muvozanat organizmning gomeostazini ta’minlashda muhim rol o‘ynaydi[1,8]. Bu tizimlarning faoliyati o‘zaro to‘ldiruvchi, lekin bir-biriga qarama-qarshi bo‘lib, bir vaqtning o‘zida har ikkala tizimning ta’sirini tenglashtirib boradi. Masalan, jismoniy faoliyat paytida simpatik tizim faol bo‘lsa, dam olish va ovqat hazm qilish holatlarida parasimpatik tizim yetakchilik qiladi. Bu tizimlarning har birining o‘ziga xos va zaruriyatga mos funksiyalari bor.

Avtonom nerv tizimi (ANT) organizmdagi bir qancha muhim funksiyalarni nazorat qiladi, ular orasida yurak-qon tomir tizimi, nafas olish, ovqat hazm qilish, tana harorati va boshqa ichki organlar faoliyati mavjud. Ushbu tizimning asosiy vazifasi – organizmning ichki muhitini tashqi sharoitlarga mos ravishda muvofiqlashtirish va barqarorligini ta’minlashdir. ANTning asosiy funksiyalari quyidagilarni o‘z ichiga oladi:

Avtonom nerv tizimi yurak faoliyatini boshqaradi, ya’ni yurak urish tezligi, qon bosimi va qon aylanishini nazorat qiladi. Simpatik tizim yurak urish tezligini oshiradi, qon tomirlarini toraytiradi, shuningdek, qon bosimini ko‘taradi. Bu vazifalar, ayniqsa, organizm jismoniy zo‘riqish yoki stress holatida bo‘lsa, katta ahamiyat kasb etadi. Parasimpatik tizim esa yurak urish tezligini sekinlashtiradi va qon tomirlarini kengaytiradi, natijada qon bosimi kamayadi.

Nafas olish tizimi ham avtonom nerv tizimi tomonidan boshqariladi. Simpatik tizim nafas olishni tezlashtiradi, bu organizmning kislorodga bo‘lgan ehtiyojini qondirish uchun zarur. Parasimpatik tizim esa nafas olishni sekinlashtiradi va ovqat hazm qilish jarayonini rag‘batlantiradi.

Ovqat hazm qilish tizimi funksiyalari:

Avtonom nerv tizimi ovqat hazm qilish jarayonini tartibga soladi. Simpatik tizim ovqat hazm qilish jarayonini to‘xtatib, organizmni boshqa hayotiy faoliyatlarga yo‘naltiradi. Parasimpatik tizim esa ovqat hazm qilish jarayonini rag‘batlantiradi, ovqatni hazm qilishni va nutriviy moddalarni yutilishini osonlashtiradi. Bu tizim shuningdek, oshqozon va ichaklarning mushak faoliyatini ham boshqaradi.

Ichki sekretsiya bezlari va metabolism:

Temperatura va tana harorati:

Avtonom nerv tizimi tana haroratini ham nazorat qiladi. Simpatik tizim tana haroratini oshiradigan mexanizmlarni faollashtiradi (masalan, qizib ketgan holatda terlashni boshlatadi), parasimpatik tizim esa tana haroratini normallashtirishga yordam beradi.

Fiziologik regulyatsiya mexanizmlari:Avtonom nerv tizimi (ANT) organizmda gomeostazni saqlashda va ichki muhitni barqarorlashtirishda muhim rol o‘ynaydi. ANTning fiziologik regulyatsiya mexanizmlari asosan reflektor yoylar va neyrotransmitterlarning faolligiga asoslanadi. Ushbu mexanizmlar orqali ANT organizmning turli ichki va tashqi omillariga javob beradi.

Reflektor yoylar:

Avtonom nerv tizimining asosiy mexanizmlaridan biri bu – reflektor yoylar. Refleks jarayonlari avtomatik tarzda amalga oshadi va ongli nazoratdan mustaqildir. Reflektor yoylar asosida ANT ichki organlar bilan miyada joylashgan markazlar o‘rtasida ma’lumotlarni uzatadi. Har bir reflektor yoy bir necha komponentlardan iborat:

1. Retseptorlar – sezgi organlarida joylashgan bo‘lib, tashqi yoki ichki muhitdagi o‘zgarishlarni qabul qiladi.
2. Afferent (kiruvchi) yo‘llar – retseptorlardan olingan ma’lumotlarni markaziy nerv tizimiga uzatadi.
3. Integratsion markazlar – markaziy nerv tizimi (bosh miya va orqa miya) darajasida joylashgan bo‘lib, kiruvchi ma’lumotni qayta ishlaydi va javobni ishlab chiqadi.
4. Efferent (chiqish) yo‘llar – markaziy nerv tizimidan ichki organlarga uzatilgan javob signalini olib boradi.

5. Effektorlar – organlar yoki bezlar bo‘lib, ularga uzatilgan signalga javob berib, faoliyatni tartibga soladi.

Reflektor yoylar orqali ANT organizmning turli muhit sharoitlariga tezda javob qaytaradi. Masalan, qon bosimining oshishi natijasida reflektor yoy orqali simpatik va parasimpatik tizimlar orasidagi muvozanat o‘zgartiriladi, bu esa qon bosimini normallashtirishga yordam beradi.

Neyrotransmitterlar va ularning roli: ANTning faoliyati neyrotransmitterlar orqali amalga oshiriladi. Neyrotransmitterlar – nerv hujayralari o‘rtasidagi signallarni uzatishda ishtirok etuvchi kimyoviy moddalar bo‘lib, ular sinapslar orqali uzatiladi. Avtonom nerv tizimida ikkita asosiy neyrotransmitter mavjud:

1. Atsetilxolin (ACh) – parasimpatik tizimning asosiy neyrotransmitteri bo‘lib, u markaziy nerv tizimi orqali efferent neyronlar orqali ichki organlarga ta’sir qiladi. Atsetilxolin yurak faoliyatini sekinlashtiradi, qon tomirlarini kengaytiradi va ovqat hazm qilishni rag‘batlantiradi.

2. Norepinefrin (NE) – simpatik tizimning asosiy neyrotransmitteri, u organizmni stressga tayyorlash va hayotiy faoliyatlarni tezlashtirish uchun javobgardir. Norepinefrin yurak urishini tezlashtiradi, qon tomirlarini toraytiradi va nafas olishni tezlashtiradi.

Ushbu neyrotransmitterlar organizmning o‘zgaruvchan sharoitlarga moslashuvchanligini ta’minlashda muhim rol o‘ynaydi. Ularning miqdori va ta’siri ANTning turli vazifalarini bajarishda muvozanatni saqlashga yordam beradi.

Gomeostaz – organizmning ichki muhitini tashqi sharoitlar o‘zgarishlariga qaramasdan barqaror saqlash jarayonidir. ANT bu jarayonni boshqarishda muhim rol o‘ynaydi.

Avtonom nerv tizimi (ANT) organizmning ichki muhitini boshqarishda asosiy rol o‘ynaganligi sababli, uning normal faoliyatidagi har qanday buzilishlar keng ko‘lamli tibbiy muammolarga olib kelishi mumkin. ANT kasalliklari va buzilishlari organizmdagi turli tizimlar va organlar faoliyatini izdan chiqarib, jiddiy sog‘liq muammolariga sabab bo‘ladi. Bu bo‘limda ANT bilan bog‘liq ba’zi asosiy kasalliklar va buzilishlar keltirilgan.

Simpatik nerv tizimi buzilishlari:

Simpatik tizimning ortiqcha yoki yetishmovchiligi organizmning ko‘plab funksiyalarini buzishi mumkin. Simpatik tizimning ortiqcha faoliyati, masalan, hipertoniya (yuqori qon bosimi), yurak urish tezligining tezlashishi, va nerv tizimi tomonidan boshqariladigan boshqa jismoniy reaktsiyalarning kuchayishi bilan bog‘liq bo‘lishi mumkin. Bu holatlar stress yoki doimiy tashvish holatlaridan kelib chiqishi mumkin.

Simpatik tizimning gipofunksiyasi esa, qondagi qon bosimining pasayishiga, yurak urishining sekinlashishiga va boshqa sog‘liq muammolariga olib keladi. Masalan, ortostatik gipotoniya (yerdan turish bilan qon bosimining keskin pasayishi) simptomi, odatda simpatik tizimning yetarlicha faoliyat ko‘rsatmasligi natijasida yuzaga keladi.

Parasimpatik tizimning buzilishi turli holatlar va kasalliklar bilan bog‘liq bo‘lishi mumkin. Masalan, parasimpatik tizimning faolligining ortishi bradikardiya

(yurak urish tezligining kamayishi) va yurak ritmi buzilishlari kabi holatlarni keltirib chiqarishi mumkin. Bunday holatlar odatda parasimpatik tizimning haddan tashqari faollashuvi natijasida yuzaga keladi.

Bundan tashqari, parasimpatik tizimning yetishmovchiligi ichki organlarning faoliyatining buzilishi, hazm qilish tizimining zaiflashuvi, va yurak-qon tomir tizimining disfunktsiyasi kabi kasalliklarga olib kelishi mumkin. Misol uchun, irritable bowel syndrome (IBS) (bezovta ichak sindromi) va gastropareziya (oshqozonning o‘z vaqtida bo‘shashmasligi) parasimpatik tizimning faoliyatining yetishmasligi natijasida yuzaga keladi.

Avtonom nerv tizimi disfunktsiyasi: disautonomiya

Disautonomiya – bu avtonom nerv tizimining buzilishiga olib keladigan holat bo‘lib, u ko‘pincha ANTning normal funksiyalarini noto‘g‘ri va noto‘liq bajarishiga sabab bo‘ladi. Disautonomiya alomatlari ko‘plab tizimlarga ta’sir qilishi mumkin: yurak-qon tomir tizimi, nafas olish tizimi, hazm qilish tizimi va boshqa ichki organlar. Bu kasallikda simptomlar har xil bo‘lib, ular insonning kundalik faoliyatiga sezilarli darajada ta’sir qilishi mumkin. Masalan, yurak urishi ritmining tezlashishi yoki sekinlashishi, qon bosimining o‘zgarishi, va terlashning o‘zgargan holatlari disautonomiyaning belgilari bo‘lishi mumkin.

Avtonom nerv tizimining kasalliklari va davolash usullari:

ANT kasalliklarini davolashda asosiy yo‘nalish – simptomlarni kamaytirish va tizimning normal faoliyatini tiklashga qaratilgan. Bunga, avvalo, medikamentoz davolash va jismoniy terapiya kiritiladi. Simpatik tizimning ortiqcha faolligini kamaytirish uchun beta-blokatorlar va kaltsiy kanali blokatorlari ishlatiladi, parasimpatik tizimning faolligini oshirish uchun esa atsetilxolin esterlari qo‘llaniladi.

Bundan tashqari, ANTning kasalliklarini davolashda psixoterapiya, stressni boshqarish texnikalari va yengil jismoniy mashqlar ham samarali bo‘lishi mumkin.

Xulosa: Avtonom nerv tizimi (ANT) organizmning ichki muhitini tartibga solish va tashqi muhitga moslashuvchanligini ta’minlashda muhim rol o‘ynaydi. U markaziy nerv tizimi bilan birgalikda organizmning hayotiy faoliyatlarini muvofiqlashtiradi, turli ichki va tashqi omillarga javob beradi. ANTning asosiy vazifalari orasida yurak-qon tomir tizimi, nafas olish, ovqat hazm qilish va tana haroratini boshqarish mavjud. Simpatik va parasimpatik tizimlar o‘rtasidagi o‘zaro muvozanat organizmning normal faoliyatini saqlashga yordam beradi.

Simpatik tizim, asosan, jismoniy zo‘riqish va stressga javob sifatida organizmni faollashtiradi, parasimpatik tizim esa organizmni dam olish va ovqat hazm qilish jarayonlariga yo‘naltiradi. Ushbu tizimlar o‘rtasidagi o‘zaro muvozanat gomeostazni saqlashga yordam beradi.

Biroq, ANTning normal faoliyatidagi buzilishlar, masalan, simpatik va parasimpatik tizimlar orasidagi muvozanatning o‘zgartirilishi, turli kasalliklar va buzilishlarga olib kelishi mumkin. Simpatik tizimning ortiqcha faolligi hipertoniya, yurak-qon tomir kasalliklari, parasimpatik tizimning buzilishi esa ichki organlarning faoliyatiga ta’sir qilishi mumkin. Shuningdek, disautonomiya kabi

ANT kasalliklari jiddiy klinik alomatlar bilan namoyon bo‘lib, odamlarning hayot sifatiga sezilarli darajada ta’sir qiladi.

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HOZIRGI GLOBALLASHUV JARAYONIDA MAMLAKATIMIZDA TURIZM INDUSTRIYASINI RIVOJLANTIRISH IMKONIYATLARI

Annotatsiya. *Ushbu ishda hozirgi globallashuv sharoitida O'zbekiston Respublikasida turizm industriyasini rivojlantirishning imkoniyatlari va istiqbollari tahlil qilingan. Globallashuv jarayoni mamlakatlar o'rtasidagi iqtisodiy, madaniy va axborot aloqalarini kuchaytirib, turizm sohasida yangi imkoniyatlar yaratmoqda. Ishda O'zbekistonda mavjud bo'lgan tarixiy-madaniy meros, tabiiy boyliklar hamda zamonaviy infratuzilmaning rivojlanishi orqali turizm salohiyatini oshirish yo'llari ko'rib chiqilgan. Shuningdek, xorijiy tajribalar asosida turizm sohasiga investitsiyalarni jalb qilish, raqamli texnologiyalarni joriy etish va marketing strategiyalarini takomillashtirish kabi takliflar bildirilgan. Mazkur ish turizm industriyasini yanada rivojlantirishga qaratilgan amaliy tavsiyalarni o'z ichiga olgan bo'lib, sohaga oid strategik qarorlar qabul qilishda muhim ahamiyat kasb etadi.*

Kalit so'zlar. *Turizm xizmatlari eksporti, "Umra plyus" turpaketi, jahon turizmi, "Tabarruk ziyorat" kontsepsiyasi.*

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OPPORTUNITIES FOR THE DEVELOPMENT OF THE TOURISM INDUSTRY IN OUR COUNTRY IN THE PROCESS OF CURRENT GLOBALIZATION

Annotation. *This work analyzes the possibilities and prospects for the development of the tourism industry in the Republic of Uzbekistan in the conditions of current globalization. The globalization process increases economic, cultural*

and information relations between countries, creating new opportunities in the field of Tourism. The work considers the ways to increase the potential of tourism through the historical and cultural heritage, natural resources and the development of modern infrastructure that exist in Uzbekistan. Proposals have also been made based on foreign experiences such as attracting investments in the tourism sector, introducing digital technologies and improving marketing strategies. This work includes practical recommendations aimed at the further development of the tourism industry and is important in making strategic decisions regarding the industry.

Keywords. *tourism services export, ”Umra plus "turpaket, World Tourism,” Tabarruk pilgrimage" concept*

Kirish. Jahonda kechayotgan globallashuv jarayoni, iqtisodiy raqobatga qaramay, turizm industriyasi iqtisodiyotning faol rivojlanayotgan tarmoqlaridan biriga aylanib bormoqda. Bunda barcha davlat o‘zi uchun qulay sayyohlik yo‘nalishini, ya’ni bozorda mavqeini egalash, xizmatlar ko‘rsatishning har tomonlama qulay yo‘nalishlarini tanlashga harakat qilmoqda. Buning asosiy sabablaridan biri turizm rivojlangan davlatlar uning serdaromad ekanini anglab yetayotganida. Ya’ni sayyohlik orqali topilgan daromadning 30 foizi odamlarning qo‘liga ish haqi bo‘lib bormoqda. Tarmoqda ochilgan bitta o‘rni boshqa sohalarda qo‘shimcha ikki kishining bandligini ta’minlaydi.

Asosiy qism. O‘zbekistonda ham sayyohlik sohasida juda katta o‘zgarishlar bo‘lmoqda. Bu xususda shu yil 7 fevral kuni Prezidentimiz raisligida hududlarda xizmat ko‘rsatish sohalarini rivojlantirish masalalari bo‘yicha o‘tkazilgan videoselektorda batafsil so‘z yuritildi. Ta’kidlashishicha, sayyohlikni rivojlantirishga qaratilgan yangi me’yoriy-hududiy hududlar ishlab chiqilmoqda. Halqaro va mahalliy tadbirlar, yangi ta’lim muassasalari faoliyati yo‘lga qo‘yilishi, yangi sayyohlik mahsulotlari, yangi yo‘nalishlari rivojlantirishga oid sa’y-harakatlar ancha faollashadi. Natijada o‘tgan yili turizm xizmatlari eksporti 3,5 milliyard dollarni tashkil etdi. Lekin bu imkoniyatlarimizga mos emasligi alohida qayd etildi. Masalan, Malayziya va Indoneziyada naqshbandiya tariqatining 7 millionga yaqin izdoshi bor. Ular umraga borishdan oldin ziyoratgohlarimizga kelishni istaydi. Bu sayyohlarni Kuala-Lumpur yoki Jakartadan Samarqand va Buxoroga 2 kunga olib kelib, o‘zimizning samolyotda umraga yuborish uchun barcha sharoit mavjud. Shu bois, mutasaddilarga Malayziya va Indoneziya ziyoratchilar uchun “Umra plyus” turpaketini joriy etish topshirildi.

Shahrisabzda Oqsaroy, Xivada Ichan qal’a, Buxoroda Labi hovuz, Toshkentda “Yangi O‘zbekiston” maydonlari bo‘lsa-da, ularda kontsert, ko‘rgazma, forumlar o‘tkazish bo‘yicha aniq rejalar qilinmagan. O‘zimizdagi 6 ta turistik markazda xalqaro darajadagi san’atkorlarning kontserti tashkil qilinsa, mehmonxonaga, restoran, kafe, savdo va xizmat ko‘rsatish ob’ektlari sayyoxatlar bilan yanada to‘ladi.

Turizm qo‘mitasiga sayyohlaruchun mehmonxona, dam olish maskanlarini band qilish, avia vat emir yo‘l, muzey, teatrga chipta sotib olish, gid va tarjimonlar

yollash kabi xizmatlarni masofadan turib olish imkonini beradigan yagona platformani ishga tushirish vazifasi topshirildai.

Sayyohlarning fikr-mulohazalarini inobatga olib, turizm va servis joylarini kechqurun ham ishlaydigan qilish kerakligi ta'kidlandi. So'nggi uch yilda 27 turdagi davlat xizmati xususiy sektorga beriladi.

Lekin vazirliklarda bu yo'nalishda hali qilinadigan ishlar juda ko'pligi ko'rsatib o'tildi.

Davlatimizning rahbarining 2036 yil 2 dekabrdagi "O'zbekiston Respublikasining turim sohasini jadal rivojlantirishni ta'minlash chora-tadbirlari to'g'risidagi"gi farmoni bu borada tarixiy ahamiyatga ega hujjatlardan biri bo'lgan edi. Ushbu farbon asosida iqtisodiyotda birinchi marotaba turizmga strategic sektor maqomi berilgandi. Natijada O'zbekistonda xorijiy hamda mahalliy sayyohlarga xizmat ko'rsatuvchi yondosh soha va tarmoqlarning rivojlanishini ta'minlashda yangi bosqich boshlandi.

Tarmoqni etakchi kuchga aylantirish, iqtisodiyotni tarkibiy o'zlashtirish va diversifikatsiyalash, bandlikni ta'minlash, aholining turmush darajasi hamda sifatini oshirishga e'tibor qaratildi. Pirovardida yurtimizda 2017-2024 yillarda bu borada juda ko'p yangiliklar kuzatildi. Qator me'yori-huquqiy hujjatlar qabul qilindi. Xususan, 10 ta bob, 45 ta moddadan iborat. "Turizm to'g'risida"gi qonunning yangi tahriri qabul qilindi.

Xorijiy davlatlardan keluvchilar uchun viza rejimi soddalashtirildi. Ayni paytda 93 ta davlat fuqarosi uchun vizasiz kirish, 56 ta davlat uchun elekron kirish vizasi, 47 ta davlat uchun besh kunlik transit vizasiz kirish tartibi belgilangan. 55 yoshga to'lgan va turizm maqsadida 30 kundan ortiq bo'lmagan muddatga O'zbekistonga keluvchi xitoylik, AQSH lik va Vetnamlik fuqarolar uchun vizasiz kirish rejimi joriy qilindi. Shuningdek, "Vatandosh", "Student viza", "Akademik viza", "Medikal viza" va "Pilgrim viza" kabi yangi kirish vizasi turlari belgilandi.

Xalqaro aeroportlarda "yashil" va "qizil" yo'lak tizimi yo'lga qo'ldi. Ilgari keluvchilar aeroportdan o'rtacha hisobda 2-3 soatda chiqib ketgan bo'lsa, hozir 15-20 daqiqada amalga oshiriladi. Xorijiy sayyohatlarni E-mehmon tizimi orqali elektrron ro'yxatdan o'tkazish tartibi joriy etildi, erkin harakatlanish uchun sharoit yaratildi.

Yurtimizga keluvchi sayyohlar soni 2017 yilda 2,7 million, 2024 yilda 10 milliondan ziyodni tashkil etgani, ularning o'rtacha qolish muddati 7-8 kunni tashkil etib, o'tgan davr (2-3 kun)ga nisbatan 3 baravar ortgani shunday sa'y-harakatlar samarasidir.

2017 yilda har bir chet ellik turist mamlakatimiz hududida sayhat xarajatidan tashqari o'rtacha 197 dollar sarflangan bo'lsa 2024 yilda bu ko'rsatkich 430 dollarga yetgan. Ayni paytda yurtimizda faoliyat yuritayotgan mehmonxona brendlari orasida "Hilton", "Radisson", "Marriott", "Intercontinental", "Holiday lnn", "Crowne Plaza", "Wyndham", "Ramada Encore by Wyndham", "Mercure", "Lotte citi hotel" kabi xalqaro doirada mashhur brendlar mavjud.

Bir qator xorijiy davlatlar aholisi uchun mamlakat bo'ylab sayyohatlarni tashkil etishga yo'naltirilgan 40 dan ortiq transchegaraviy turistik mashrut ishlab

chiqildi hamda O‘zbekistonning xorijdagi diplomatik vakolatxonalari orqali ushbu mamlakatlarga taqdim etildi.

Turkiy davlatlar tashkilotining VIII sammitida Prezidentimiz tomonidan ilgari surilgan “Tabarruk ziyorat” kontsepsiyasini amalga oshirish orqali ziyorat turizmini rivojlantirish bo‘yicha muayyan ishlar bajarilmoqda. Tabarruk ziyorat yo‘nalishida “Mediya info tur” to‘g‘risidagi targ‘ibot materiallari qator xorijiy hamda mahalliy ommaviy axborot vositalari yoritildi.

Markaziy Osiyo davlatlarining madaniy merosini bir-biriga o‘zaro bog‘liq holda targ‘ib qilish bo‘yicha tashabbusga asosan, YUNESKOning “Xiva deklaratsiyasi” qabul qilindi. Islom hamkorlik tashkilotining 2023 yildagi XI sesiyasida Xiva 2024 yilda “Islom dunyosining turizm poytaxti” deb e’lon qilindi va 31 may-2 iyun kunlari Xiva shahrida Islom hamkorlik tashkiloti (IHT)ga a’zo davlatlari turizm vazirlari XII yig‘ilishi o‘tkazildi.

Turkiy davlatlar tashkilotining turizm vazirlari yig‘ilishida Qo‘qon shahri “Ilk turizm poytaxti” degan sharafli nom bilan ulug‘landi. Shahrisabz shahri 2024 yilda Iqtisodiy hamkorlik tashkiloti tomonidan turizm poytaxti, deya e’tirof etildi. Bu Shahrisabz shahrini xorijiy davlatlarda targ‘ib qilish va sayyohlarni jalb qilishga imkon yaratdi.

Jahon turizm tashkiloti (UNWTO) tomonidan O‘zbekiston Respublikasi turizm sohasi eng tez rivojlanayotgan 20 mamlakat ichida 4-o‘rin e’tirof etldi. Shuningdek, ushbu xalqaro tashkilot O‘zbekistonni turizm xizmatlaridan tushgan tushumlar (eksport) bo‘yicha dunyo bo‘ylab “ikkinchi eng yaxshi yo‘nalish” sifatida ko‘rsatdi.

2023 yil 16-20 oktyabr kunlari Jahon turizm tashkiloti (UNWTO) Bosh assambleyasining 25-sessiyasi Samarqand shahrida yuqori darajada o‘tkazildi. Uning ijroiya kengashi yig‘ilishi hamda yalpi majlisiga O‘zbekistonni “Ipak yo‘lida turizm” markaziga aylantirish maqsadida Samarqand shahrida UNWTO Tematik ofisini (diplomatik mavqega ega) ochish bo‘yicha Bosh assebleya rezolyutsiyalari hamda Samarqand shahriga Jahon madaniy turizm poytaxti maqomini beruvchi dekleratsiya qabul qilindi.

Xulosa. O‘zbekiston jahon turizm bozorida eng jozibador mamlakatga aylanmoqda. Bu bir jihatdan yurtimizda turizm taraqqiyotiga katta e’tibor qaratilayotgani samarasi bo‘lsa, ikkinchidan, azaldan dunyo tamadduni xazinasi bo‘lgan tarixiy obidalarga boyligi, xalqimizning bag‘rikeng va mehmondo‘stligi tufaylidir. Albatta, bizda turizm sohasida imkoniyatlardan to‘liq foydalanilsa, dunyoning jonajon diyorimizga intilishi oshishiga, barpo etilayotgan yangi O‘zbekistonning istiqboli nurafshon bo‘lishiga olib keldi.

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THE ROLE OF NATIONAL VALUES IN THE SPIRITUAL AND MORAL EDUCATION OF CHILDREN

Abstract: *To form knowledge and skills of moral and national values in preschool children through folk tales and wisdom, and on this basis to determine ways of practical use of national values, and to develop a unique system of methods in this direction.*

Keywords: *moral education, national values, folk oral culture, legends, proverbs, educational significance, older children, spiritual education.*

The future of independent Uzbekistan largely depends on the upbringing of a well-rounded potential generation. From the first years of independence, the upbringing of a healthy generation has been identified as a priority. In the upbringing of a healthy generation, one of the main tasks is to implement a wide range of measures aimed at forming a spiritually and morally rich, morally mature, intellectually developed, highly educated, physically strong, comprehensively developed person based on high universal human values.

It is known that the formation of spiritual and moral qualities in preschool children is a mental, social, spiritual and moral state that arises as a result of a long-term continuous pedagogical process. In implementing this process, pedagogical conditions created in educational institutions, a healthy environment and goal-oriented education play an important role. The acquisition of the simplest knowledge of children about the interrelationships between events in social life serves to educate them from the very beginning of their spiritual and moral qualities. However, a properly organized pedagogical process in preschool educational organizations helps children understand the general meaning of spiritual and moral events. If children see examples of good behavior in others, they will try to be like them.

In the process of communication with adults, children form their initial behavioral experiences. The need for communication is an important social need, and an adult is a source of satisfying this social need. The content of communication should be pedagogically valuable, so that it has the necessary spiritual and moral impact on the child. The main content of educating preschool children in spiritual and moral qualities is: the culture of behavior, the upbringing of human relations between children and adults (observance of the simplest rules of social life; benevolence, caring attitude towards loved ones, etc.); educating the public; approaching educational work with respect for the child's personality; connecting spiritual and moral education with life and time; children's activity; the unity of the

educational influence of the family, preschool educational organization and adults; reliance on positive qualities in the child is especially important.

Systematic and consistent work with children increases both their spiritual and moral imagination and the level of real spiritual and moral behavior; Preschool children develop the skills to do many things with their own hands and to rejoice in the work done, to appreciate the results of the work of adults; they develop a desire to participate in work done for the common good, to play together, to engage, to set and achieve common goals. All this determines the social orientation of the child's personality. In order for spiritual and moral habits to become the norm, it is necessary to create conditions for the child to practice spiritual and moral behavior. It is necessary to guide his communication with other children, teach him how to behave in a particular situation, and to familiarize him with the rules of behavior using various activities.

A child on the threshold of school should have the following moral and ethical habits of behavior: cleanliness, tidiness, orderliness, independence, self-service, appreciation and preservation of the work of adults, being busy with something, being careful with toys, one's own things and community property, respecting adults, taking care of them, responding correctly to the words of one's parents, being disciplined, honest, and being polite, benevolent, gentle, restrained, and enthusiastic. These are cultural habits of behavior and behavior. Spiritual and moral education is such a necessary foundation that it is impossible to form the more complex features of the child's personality, his spiritual and moral qualities, ideas about the phenomena of the social life of our people and a positive attitude towards them.

When a teacher instills the simplest habits (for example, cultural behavior), the child will be able to do everything with enthusiasm and generally consciously, that is, external positive things will reflect the inner essence, his attitude to its rules. This is important for the upbringing of goodwill, for preventing the possibility of the emergence of an indifferent, careless attitude towards peers and adults around him. Thus, relatively simple positive habits of spiritual and moral education are valuable for the spiritual and moral development of the child. Educators and parents, while educating children in spiritual and moral qualities, should pay special attention to the development of respect for adults, the desire and skills to listen to their advice, instructions and readiness to carry out their tasks; they should form friendly relations with peers, a sense of caring for them and for the younger ones, for adults. Children should be taught to remember their tasks and fulfill them with enthusiasm; to share their knowledge, plans, toys and manuals with others. The formation of spiritual and moral qualities can be carried out in several directions: through games (games with rules, board games, role-playing games, theater, etc.), organizing work activities in a team, through fairy tales and by directing children to cooperate in pairs in various situations, etc.

As children acquire spiritual and moral values, they help each other in play, are kind and caring to each other, which has a positive effect on children's behavior and forms children's moral support for each other. The educator should support the

desire to show empathy and kindness in children in any way possible, and on the same basis, he can strengthen the abilities and skills of the children to help their comrades.

In preschool children, such qualities as independence, activity, self-confidence, cooperation, self-control are formed in the context of communication with peers. The intellectual and social experience gained in communication with adults is used, assimilated and enriched in communication with peers. It is advisable to form spiritual and moral qualities through specially organized cooperation in children's communities, where there are great opportunities for educating children's spiritual and moral imagination in the daily life and activities of a preschool educational organization. The child's In order for every day of the last year of school to be useful from a spiritual and moral point of view, teachers of preschool educational organizations should take care of organizing the daily life of their students as best as possible from the very beginning of the school year. From the first days, educators should discuss how to work with children who are particularly worried about them; how to deepen feelings and strengthen behavioral habits in children who delight in benevolent treatment of people, in accordance with the norms and rules of behavior; how to educate children whose behavior is extremely contradictory. It is necessary to once again analyze how children behave with different teachers, at home, and in preschool educational organizations, and what their spiritual perceptions of good and evil are, as well as the social life around them.

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THE ADVANTAGES OF SMART TEXTILES IN MODERN TEXTILE TECHNOLOGIES

Abstract. *Currently, the development of smart textile technologies is widely used not only in the textile industry, but also in various aspects of daily life. This article discusses the main advantages of smart textiles, their role in medicine, sports, fashion, safety and environmental protection. Smart fabrics are important not only for monitoring human health, but also for controlling their temperature, providing bio-assistance and creating more interactive designs. The article also provides information on the future prospects of smart textile technologies, their importance in science and industry, as well as their economic and environmental benefits.*

Keywords: *smart textiles, nanotechnology, sensors, bio-monitoring, medicine, sports, fashion, safety, environment, innovative technologies, environmental safety.*

Introduction. Serious changes and innovations are taking place in the field of modern textile technologies, because technological progress is creating new opportunities. These technologies not only help to increase the efficiency of production, but also help to reduce the impact on the environment and to create high-quality products. Let us examine some basic modern technologies:

In the modern textile industry, machines are becoming more automated and "smart." They work with the help of special programs and sensors, which automatically optimize the production process. For example, weaving machines or sewing robots provide maximum efficiency, reduce production time and errors.

Methods.

In the Methods section, you should explain the methodology used to conduct your research. You may have used one or a combination of the following methods:

Experimental method. If you conducted experiments in real-world conditions to study the effectiveness of smart textile technologies, you may have used this method.

Theoretical analysis. You may have conducted a scientific theoretical analysis to explain the benefits of modern textile technologies and smart textile systems.

Statistical analysis. If you measured the effectiveness of technologies or materials, you may have analyzed the results using statistical methods (e.g., t-test, regression analysis).

Results.

Nanotechnologies make it possible to create new methods in the textile industry. Nanoparticulate materials can add high quality and new functions (for example, water resistance, killing bacteria, or protection from UV rays) to textiles. Fabrics produced with the help of nanotechnologies can be light, durable, and at the same time environmentally safe [1].

3D printing technology is also finding its place in the textile industry. With the help of this technology, it is possible to create special fabrics and stitches. This technology allows for layer-by-layer printing of materials, which helps in creating complex shapes and designs.

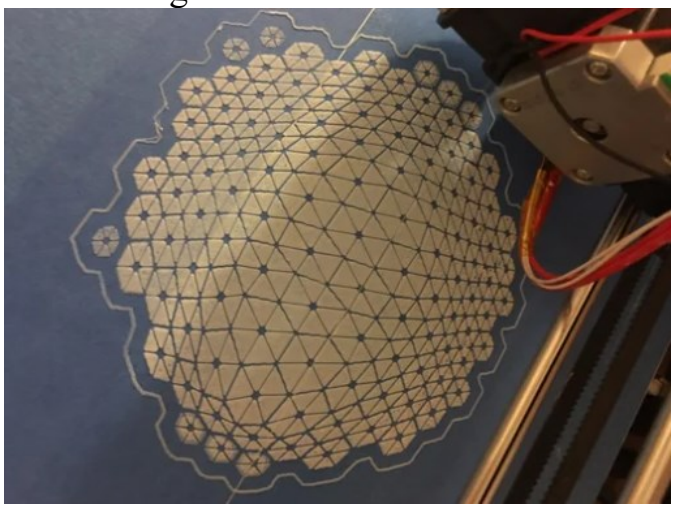

Figure 1. The process of fabric weaving on a 3D printer.

Nowadays, technologies aimed at protecting the environment, reducing waste, and increasing energy efficiency are developing. “Green” technologies, such as environmentally friendly dyeing methods, water-saving, and recycling processes, are rapidly developing in the textile industry.

Modern fabrics can have not only visual, but also interactive features. Digital fabrics, for example, can be equipped with LED lights or sensor technologies, which helps in creating new, innovative designs. This technology is also popular in the fashion industry, allowing for the creation of more interactive and personalized clothing.

Smart clothing is one of the newest developments in the textile industry. These clothes not only have an external appearance, but also perform internal functions. For example, clothes are being developed that can measure body temperature, monitor heart rate, or even generate electrical energy. These technologies are of great importance in sports, healthcare, and the military industry [2].

Smart fabrics, also known as electronic textiles and intelligent textiles, are digitally enhanced fabrics that use light and battery technologies. These fabrics have environmental sensing technology. Smart textiles work through signals received from a central control unit. An electric processor embedded in the fabric analyzes the signals. The entire function of smart textiles operates with the help of nanotechnologies.

Some general uses of smart textiles include: healthcare (using telemedicine and biomedical clothing), safety belt (a transabdominal wearable device), rescue vest (continuously monitors and reads heart rate and blood pressure), military defense (detects toxic gases and prevents injuries), sportswear (monitoring, performance and recovery support). Also, environmental monitoring and the smart bra (measures auditory frequency through sensors) [3].

Figure 2. The use of sensor-based clothing in smart textiles to detect human body health indicators.

Modern textile technologies not only help improve quality, but also contribute to making the entire industry more sustainable and innovative. With new technologies, production can become faster, more accurate, and environmentally friendly.

In healthcare and bio-monitoring, smart textile fabrics are of great importance in the field of medicine. With their help, it is possible to monitor people's physical condition in real time. For example, biological indicators such as heart rate, blood pressure, or body temperature are measured using sensors. This technology significantly facilitates long-term health monitoring in medicine [4].

In the fields of sports and fitness, smart sportswear helps athletes improve their performance. It allows athletes to control temperature, measure energy expenditure, and monitor body condition. At the same time, through smart fabrics, athletes in specific conditions (for example, body pain, fatigue) can be quickly identified and provided with the necessary assistance.

In the fields of fashion and design, smart fabrics are also bringing major changes to the fashion industry. Clothing is not only beautiful and aesthetically

appealing, but also possesses interactive features. Fabrics that change color, those that react to body temperature, or clothes with integrated LED displays are being developed. These innovations combine design and interactivity, forming new directions in fashion.

In the field of security, smart fabrics have also found their place. For example, fabrics designed for military uniforms or security personnel monitor body temperature and condition, which helps increase safety. However, these fabrics are important not only for high-level safety but also for protecting personal privacy [5].

In the field of environmental safety, smart fabrics help to develop environmentally friendly technologies. It is possible to create fabrics with features such as water conservation, recycling of waste, and increasing energy efficiency. At the same time, the use of nanotechnologies and biomaterials helps to reduce the ecological footprint and preserve natural resources.

Discussion.

The prospects for the development of smart textile technologies indicate wider application in the future. They will elevate not only design and aesthetic aspects but also functionality to a higher level. There is potential to apply smart fabrics in the automotive industry, aerospace technologies, and other advanced fields. In addition, these technologies contribute to the social and economic development of society [6].

In this section, you can evaluate the benefits of smart textile technologies based on your results. For example, analyze how smart fabrics react to heat, moisture, or mechanical forces. If your research includes measurements that show, for example, the perfection and long-term performance of fabrics, cite these results.

You can talk about the advantages created by modern technologies, for example, sensor systems used in fabrics or the self-cleaning properties of materials. At the same time, you can evaluate the role of smart textile technologies in optimizing production processes using automatic control and sensors.

Conclusion. The development of smart textile technologies is taking the textile industry to a new level. These technologies create opportunities to add additional functions to fabrics, making people's lives more comfortable and safer. Smart fabrics are especially important in areas such as medicine, sports, fashion, and security, offering innovative solutions for monitoring health, managing temperature, providing bio-assistance, and preventing harm to the environment.

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THE EFFECT OF AGE ON SECOND LANGUAGE VOCABULARY ACQUISITION

Abstract*: This paper explores the impact of age on the process of acquiring vocabulary in a second language, focusing on both theoretical insights and practical implications. Research in the fields of linguistics, cognitive psychology, and language pedagogy suggests that age plays a significant role in language learning efficiency, particularly in vocabulary development. Younger learners are believed to possess greater neuroplasticity, allowing for faster and more intuitive acquisition, while older learners often rely more on metacognitive strategies and explicit learning techniques. The study examines age-related differences in memory capacity, phonological processing, and motivation, as well as external factors such as teaching methods and learning environments. By comparing the vocabulary acquisition patterns of different age groups in Uzbekistan, the paper aims to identify age-sensitive approaches to language instruction and to contribute to the development of more effective language education policies. The findings are relevant for educators, curriculum designers, and policymakers aiming to enhance second language learning outcomes across age demographics.*

Keywords *age factor, second language acquisition, vocabulary development, language learning strategies, cognitive development, critical period hypothesis, adult learners, young learners.*

Introduction

In recent decades, the study of second language acquisition (SLA) has increasingly focused on the role of age as a determining factor in the success and efficiency of language learning. Vocabulary acquisition, as a fundamental component of linguistic competence, is especially sensitive to cognitive, neurological, and motivational changes associated with age. Researchers have long debated whether there exists a "critical period" during which language learning is most effective, and to what extent vocabulary acquisition is influenced by this developmental window. This issue becomes particularly important in multilingual and educationally diverse contexts such as Uzbekistan, where English and other foreign languages are taught across various age groups in schools, universities, and adult learning programs.

Age affects vocabulary acquisition through several interconnected mechanisms. Younger learners tend to acquire new words implicitly through exposure and repetition, often benefiting from greater neuroplasticity and

phonological memory. Conversely, older learners typically rely on explicit learning strategies, such as conscious memorization, contextual analysis, and translation. These strategies are often supported by a more developed understanding of grammatical rules and linguistic structures. However, the decline in working memory and processing speed that may accompany aging can pose obstacles to efficient vocabulary retention and retrieval.

Results

In addition to biological and cognitive aspects, socio-affective variables also contribute to differences in vocabulary learning across age groups. Motivation, anxiety, self-confidence, and cultural attitudes toward language learning can enhance or hinder lexical development. For instance, young children may be more willing to experiment with language and make mistakes, whereas adults might be more cautious or inhibited. On the other hand, adult learners often demonstrate stronger goal-orientation and self-regulation, which can compensate for cognitive limitations.

This paper aims to analyze the effect of age on second language vocabulary acquisition from both theoretical and empirical perspectives. It draws upon current findings in applied linguistics, psycholinguistics, and education to understand how age-related differences manifest in vocabulary learning outcomes. Furthermore, it evaluates language learning policies and practices in Uzbekistan to determine whether they align with research-based principles of age-appropriate instruction. By comparing learning outcomes across different age cohorts, the study seeks to offer practical recommendations for teachers and curriculum developers who design language instruction for various learner populations.

The relationship between age and second language vocabulary acquisition is multifaceted, encompassing neurological, cognitive, affective, and social dimensions. One of the most widely discussed concepts in the literature is the Critical Period Hypothesis (CPH), which posits that there is a biologically determined window during which language learning occurs most naturally and efficiently. While the CPH is more strongly supported for phonology and syntax, its relevance to vocabulary learning remains debated. Some studies suggest that lexical learning remains robust well into adulthood, albeit through different mechanisms compared to childhood acquisition.

Younger learners, particularly those below the age of 12, often exhibit superior phonological processing and greater ease in acquiring native-like pronunciation and intonation. Their vocabulary learning is largely incidental and based on immersive experiences, such as songs, stories, and games. These learners typically do not rely on conscious strategies but acquire new words through contextual exposure and frequent use. This process benefits from the high degree of brain plasticity characteristic of early childhood, which allows for rapid formation and reorganization of neural connections.

In contrast, older learners tend to engage in deliberate vocabulary learning. Adolescents and adults often apply metacognitive strategies such as repetition, association, word mapping, and using dictionaries. They are also more likely to use

translation from their first language, which, while effective in some cases, may inhibit deeper lexical processing. However, mature learners compensate for reduced neuroplasticity with increased analytical ability, literacy skills, and awareness of grammatical structures, which can aid in processing and retaining more complex vocabulary.

Memory also plays a critical role in age-related differences. Working memory capacity, which peaks in early adulthood and gradually declines with age, significantly affects the ability to store and retrieve new words. Younger learners may retain vocabulary more intuitively, while older learners require structured review sessions to reinforce lexical knowledge. Long-term memory, on the other hand, tends to remain stable or even improve with age, suggesting that older learners may retain learned vocabulary more consistently if adequately practiced.

Motivation and emotional factors further distinguish age groups. Young children are typically motivated by enjoyment and social interaction, while adults are more likely to be instrumentally motivated, learning a language for career advancement, travel, or migration. High levels of motivation have been shown to override cognitive limitations, especially in adult learners. Nonetheless, older learners may face affective barriers such as anxiety, self-doubt, or lack of time, which can negatively impact vocabulary acquisition.

Methods

Contextual and environmental variables also influence age-related learning differences. In Uzbekistan, for example, formal English instruction begins in early primary education, yet opportunities for immersive and communicative practice are often limited. Adult learners may face even greater obstacles due to professional obligations or lack of access to formal education. Thus, the success of vocabulary acquisition is not solely dependent on age, but also on the quality and relevance of the learning environment, availability of resources, and the use of age-appropriate pedagogical approaches.

This section has demonstrated that age influences second language vocabulary acquisition through a combination of biological, cognitive, and social factors. The following conclusion will synthesize these findings and propose practical recommendations based on the analysis.

The effect of age on second language vocabulary acquisition is complex and shaped by a dynamic interplay of neurological, cognitive, emotional, and environmental factors. While younger learners possess certain biological advantages—such as higher neuroplasticity and stronger phonological memory—that facilitate incidental and natural vocabulary acquisition, older learners bring distinct strengths to the process, including strategic awareness, analytical thinking, and goal-oriented motivation. These differences do not imply that one age group is inherently superior to another in language learning but rather that the learning process unfolds differently depending on the learner's age and circumstances.

Discussion

This thesis has shown that vocabulary learning does not strictly adhere to the constraints of the Critical Period Hypothesis. Although early exposure may lead to

more native-like lexical fluency, older learners are fully capable of acquiring a wide vocabulary range through structured and intentional learning strategies. Age-related cognitive decline, such as reduced working memory capacity, can be mitigated through pedagogical interventions such as spaced repetition, multimodal learning, and contextual usage. Moreover, emotional and motivational factors—often stronger in adult learners—can significantly enhance vocabulary retention when instruction is personalized and meaningful.

The findings of this research carry important implications for language education in Uzbekistan and beyond. Given the diverse age range of learners in formal and informal educational settings, language instruction should be tailored to developmental characteristics. For younger learners, playful immersion, story-based input, and interaction-rich environments are essential. For adolescents and adults, instruction should focus on explicit vocabulary-building strategies, frequent practice, and integration with real-life needs such as academic or professional communication.

Language policy planners and educators should reconsider one-size-fits-all approaches and instead implement differentiated instructional models that align with the age-related needs and strengths of learners. This may include developing age-specific materials, training teachers in age-sensitive methodologies, and ensuring access to language-rich environments for all learners.

In conclusion, age is not a barrier to second language vocabulary acquisition but a variable that requires thoughtful pedagogical adaptation. Future research in Uzbekistan and similar multilingual contexts should continue to investigate age-related factors in vocabulary learning, not only to improve individual outcomes but also to enhance the overall effectiveness and inclusivity of language education systems.

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SUSTAINABLE FLORAL DESIGN: REDUCING ENVIRONMENTAL IMPACT IN EVENTS AND EVERYDAY LIFE

Annotation: *Floral design plays an essential role in both everyday aesthetics and large-scale event experiences. However, traditional floristry practices often involve significant environmental costs, including the use of non-biodegradable materials, imported flowers, and chemical preservatives. This article explores the evolution of sustainable floral design as a response to growing ecological concerns. Drawing on professional experience and current global practices, the study examines alternative materials, methods, and ethical approaches that reduce waste and carbon emissions. The article emphasizes how florists can act as agents of change by adopting eco-conscious practices and promoting sustainability within the floral industry. As global awareness of sustainability grows, demand for eco-friendly floral services is rapidly increasing.*

Keywords: *sustainable floristry, event design, eco-friendly materials, floral foam alternatives, local flowers, circular design, environmental responsibility*

Introduction

In recent years, the floral design industry has faced increasing scrutiny over its environmental impact. From wedding installations and corporate events to everyday bouquets, traditional floral practices often rely on imported flowers, chemical treatments, and single-use plastics. These approaches, while visually stunning, contribute to significant waste generation, carbon emissions, and pollution. As awareness of climate change and ecological degradation grows, both florists and clients are rethinking the way flowers are sourced, arranged, and disposed of.

Sustainable floral design emerges not only as an ethical response to environmental challenges, but also as a creative opportunity to rethink aesthetics and materials in harmony with nature. It invites a shift in mindset — from disposable beauty to mindful artistry. By integrating sustainable strategies into their practice, florists can reduce harm to the planet while offering clients meaningful, modern, and responsible floral experiences.

This article explores the key environmental issues in traditional floristry and highlights practical, forward-thinking alternatives. Based on professional experience and industry research, it examines how design choices — from flower sourcing to construction techniques — can align with ecological values without sacrificing artistic integrity.

Methods

This study employed the following methods:

• Literature review: Analysis of contemporary scientific and professional literature on sustainable floristry, eco-friendly materials, and industry practices.

• Comparative analysis: Evaluation of traditional versus sustainable techniques based on personal experience as a floral designer in the United States (Miami and New York).

• Qualitative observation and case studies: Regular discussions with fellow florists from various regions (including California), sharing experiences at professional events and within online communities.

• Practical assessment: Implementation and evaluation of sustainable methods in personal projects-such as eliminating floral foam, using sphagnum moss and chicken wire, and prioritizing reusable and natural materials-along with feedback from clients and colleagues.

These methods made it possible to identify the real-world challenges and opportunities for transitioning to sustainable floristry in the U.S. market, as well as to assess the influence of the professional community on the adoption of eco-friendly practices.

1. Environmental Challenges in the Floral Industry

The floral industry, while dedicated to creating beauty, has historically relied on materials and practices that harm the environment. As sustainability becomes a global priority, florists must confront the less visible consequences of their work. This section outlines the main environmental challenges in traditional floristry, focusing on chemical use, plastic waste, and carbon emissions — three key areas where change is urgently needed.

1.1. Chemical Use and Soil Degradation

Cut flowers are among the most chemically treated agricultural products in the world. In order to survive long shipping times and remain visually appealing, flowers are often sprayed with a cocktail of pesticides, fungicides, and preservatives — many of which are banned for use on food crops due to their toxicity (Stewart, 2007).

For instance, flowers imported from Colombia or Ecuador are treated with methyl bromide, a known ozone-depleting substance. These chemicals not only harm the health of workers who apply them (many of whom are women in vulnerable communities), but also lead to soil degradation and water contamination in the regions where flowers are grown (Pimentel, 2005).

Even after arrival, chemically treated flowers can still emit volatile organic compounds (VOCs), potentially affecting indoor air quality — a largely overlooked issue in event spaces and homes.

1.2. The Problem with Floral Foam

One of the most widely used tools in floral design is floral foam, also known by the brand name “Oasis.” While convenient and effective in holding stems in place, floral foam is a petroleum-based plastic product that breaks down into

microplastics. These microplastics can enter waterways during disposal and are nearly impossible to remove from the environment (RHS, 2020).

Additionally, floral foam is non-biodegradable and cannot be composted, meaning it contributes directly to landfill waste. According to a 2019 study published by the Royal Horticultural Society, a single floral installation can produce several pounds of non-recyclable waste solely from floral foam.

Despite increasing awareness, floral foam remains in widespread use, especially in large-scale event design where structural support is crucial. Florists must now weigh aesthetic ambition against ecological responsibility and explore viable alternatives.

1.3. Global Sourcing and Carbon Footprint

Another major environmental concern in floristry is the carbon footprint associated with flower transportation. The vast majority of flowers used in the United States are flown in from overseas — particularly from the Netherlands, Kenya, Ecuador, and Colombia — via refrigerated cargo planes. After air travel, flowers are transported by truck to distribution centers and then on to retailers, wedding planners, and florists (Rabobank, 2018).

This complex logistics chain significantly contributes to greenhouse gas emissions. A single Valentine's Day shipment of roses from Colombia to the U.S. produces approximately 360,000 metric tons of CO_2, according to data from the International Council on Clean Transportation.

Local alternatives do exist, but often lack the same year-round availability and volume as international imports. As a result, many florists struggle to balance client expectations with the limitations of seasonal, regional agriculture.

1.4. Event Waste and Short Lifespan

Event florals — particularly for weddings, galas, and corporate events — are typically created for single-day use and then discarded. Even when biodegradable flowers are used, the surrounding materials (ribbons, foam, plastic wraps, etc.) often prevent composting or reuse.

It's estimated that the wedding industry in the U.S. alone produces over 1 billion pounds of garbage each year, with floral arrangements accounting for a large portion of this waste (Green Bride Guide, 2010). Without a plan for post-event donation or recycling, florals that could otherwise decompose naturally end up in landfills.

2. Approaches to Sustainable Floral Design

As awareness of environmental issues grows, florists and event designers are rethinking traditional methods and materials. Sustainable floral design isn't just a trend — it's a necessary response to a changing climate and the urgent need to reduce waste. Below are some of the most impactful strategies for making floral work more sustainable, both in everyday arrangements and large-scale installations.

2.1. Choosing Local and Seasonal Flowers

While the idea of sourcing local and seasonal flowers is central to sustainable floral design, the reality of accessing such blooms can vary greatly depending on geography, infrastructure, and climate. In theory, local flowers reduce

transportation emissions, support small farms, and require fewer preservatives. However, in practice, this approach presents unique challenges — particularly in places like Florida.

In Miami, where I am currently based, growing flowers locally on a sustainable scale is difficult. There is limited governmental support for small-scale flower farming, and access to land is expensive. As a result, the few locally grown flowers available are often more costly than imported ones — including those flown in from Europe or South America. Local stems also tend to be in short supply, unable to meet the demands of full-scale event design.

By contrast, during my time living and working in New York, local flowers were a joy to work with — but only seasonally. In spring, summer, and early fall, we had access to incredible blooms like spirea, lilac, and peonies that were both affordable and of outstanding quality. We would order directly from growers and look forward to the start of the growing season. These stems were often more beautiful and long-lasting than their imported counterparts.

2.2 Eliminating Floral Foam and Embracing Sustainable Mechanics

Floral foam, available under various brands and in multiple forms (wet, dry, specialty), has long been a staple in the floral industry due to its convenience and ability to support intricate designs. The most widely recognized brand is Oasis, but the environmental concerns-such as non-biodegradability, microplastic pollution, and landfill accumulation apply to all floral foam products, regardless of manufacturer.

As awareness of these issues grows, florists are increasingly turning to sustainable alternatives for both everyday arrangements and large-scale event installations. Among professional mechanics, kenzan (also known as a pin frog) stands out for its precision and reusability. Originating from the Japanese art of Ikebana, the kenzan is a heavy metal base with sharp pins that securely hold stems in place. It is especially valued for bouquets and smaller arrangements where stability and control are essential.

For larger designs, chicken wire has become the most popular and versatile alternative. This flexible, reusable mesh allows florists to create stable structures for a wide variety of arrangements without generating synthetic waste. Its adaptability makes it suitable for both everyday floristry and event work.

Natural materials such as twigs, branches, vines, and moss are also gaining popularity as sustainable mechanics. These elements can be used to build organic frameworks that support stems, while compostable holders and moss-wrapped bases further reduce environmental impact and align with circular design principles.

In my own practice, I have fully eliminated floral foam from everyday floral work, opting instead for chicken wire or arranging flowers directly in vases without any internal mechanics. For bouquets and compact designs, I frequently use kenzan, appreciating its durability and professional precision. In event design, especially for table centerpieces, I have nearly phased out floral foam altogether. While completely eliminating foam from large-scale installations in Miami’s climate

remains a challenge, I am actively pursuing sustainable solutions that will allow for a full transition in the future.

2.3 Sustainable Packaging and Reusable Materials

Packaging is a significant yet often overlooked source of waste in the floral industry. Traditional practices rely heavily on single-use plastics, synthetic ribbons, cellophane wraps, and non-recyclable containers — all of which contribute to landfill accumulation and environmental pollution. Transitioning to sustainable packaging not only reduces waste but also enhances the overall aesthetic and ethical value of floral arrangements.

Sustainable alternatives include:

• Natural fiber ribbons: Cotton, linen, jute, hemp, and occasionally silk provide biodegradable solutions for tying bouquets and decorating arrangements.

• Twine and raffia: These simple materials support rustic and minimalist styles, while aligning with eco-conscious values.

• Reusable containers: Glass, ceramic, and metal vases can be collected, sanitized, and reused for future orders or rentals. Even plastic tubes — commonly used for orchids and anthuriums — can be cleaned and repurposed as water sources in large-scale installations.

• Recycled and recyclable vessels: Containers made from recycled glass or plastic, as well as compostable pots, help close the loop on material use.

• Eco-friendly wrapping: Kraft paper, recyclable or compostable paper, and fabric wraps inspired by the Japanese furoshiki technique are elegant, reusable alternatives to plastic or foil.

The trend of encouraging clients to return containers and packaging for reuse is gaining traction among leading florists in the United States. This practice not only reduces waste but also fosters a sense of shared responsibility between florists and clients, further supporting the transition to a circular economy within the floral industry.

2.4. Reducing Waste and Repurposing Flowers

Floral waste is one of the most persistent environmental challenges in the industry, particularly in the context of events where large-scale arrangements are used only briefly. By the end of a celebration, hundreds of blooms may be discarded despite being in excellent condition. Implementing systems for repurposing or donating these flowers extends their life and reduces unnecessary landfill contribution.

One of the most effective strategies is encouraging clients to take arrangements home after an event. This practice not only minimizes waste but also leaves guests with a lasting, tangible memory.

In cases where reuse by guests isn’t possible, donation is a powerful alternative. Flowers can be delivered to hospitals, hospices, care homes, or community centers, offering a meaningful second life while brightening someone else’s day.

In the United States, several non-profit organizations such as Repeat Roses and Random Acts of Flowers specialize in collecting event flowers and

redistributing them to hospitals, care facilities, and community centers. Partnering with such organizations can help florists maximize the positive impact of their work and ensure that arrangements bring joy to as many people as possible.

Reducing waste also includes rethinking how leftover materials - such as stems, and leaves - are sorted and composted. Creating a designated composting system or partnering with local composting initiatives can further minimize environmental impact.

By integrating repurposing and donation into floral design planning, florists not only reduce waste but also foster a culture of sustainability, compassion, and community engagement.

Results

The research and implementation of sustainable practices yielded the following results:

• Gradual elimination of floral foam proved feasible even for complex arrangements. For example, in a recent event, sphagnum moss and chicken wire were used to provide stability and reduce plastic waste.

• In regions with a strong local flower market (such as California and New York), there is a widespread shift among florists toward seasonal, locally grown flowers, which reduces carbon footprint and supports local growers.

• Even partial adoption of sustainable solutions-such as minimizing plastic packaging and reusing containers leads to waste reduction and is positively received by clients.

• Active discussion of eco-friendly methods among florists accelerates the spread of sustainable practices within the professional community.

• Main barriers include limited availability of local flowers in some regions and insufficient client awareness regarding the benefits of sustainable floristry.

Thus, even gradual integration of eco-friendly methods into everyday floral practice leads to a noticeable reduction in environmental impact and helps set a new standard in the industry.

Conclusion

A responsible approach in floral design isn't just a trend — it's a way to create beauty with greater awareness and care for the world around us. For me as a florist, it's become part of my philosophy: not only to think about the shape of a bouquet, but also about the trace it leaves behind.

It's not always easy — sourcing local flowers can be a challenge, and clients don't always embrace the idea of reusing materials or changing traditions. But with each project, each conversation, each bouquet, we help shift the perception of floristry — making it not only beautiful, but also honest.

Sustainability isn't the end of creativity. It's what makes it deeper, more thoughtful, and more real.

Continued innovation and collaboration within the floral industry will be essential for scaling sustainable practices and inspiring the next generation of florists.

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O‘ZBEKISTON RESPUBLIKASIDA TRANSPORT XIZMATLARI BOZORINING XOZIRGI XOLATI VA UNING IQTISODIY TAXLILI

Annotatsiya: *Ushbu maqolada O‘zbekiston Respublikasi transport xizmatlari bozorining hozirgi holatini o‘rganishga qaratilgan. Maqolada transport tizimining rivojlanish tendensiyalari, sohadagi mavjud muammolar va imkoniyatlar tahlil qilinadi.*

Kalit so’zlar: *transport xizmatlari bozori, transport infratuzilmasi, yo‘l infratuzilmasi, transport tarmoqlari (avtomobil, temir yo‘l, havo va dengiz), avtomobil transporti.*

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CURRENT STATE OF THE TRANSPORTATION SERVICES MARKET IN THE REPUBLIC OF UZBEKISTAN AND ITS ECONOMIC ANALYSIS

Annotation: *This article is aimed at studying the current state of the transportation services market of the Republic of Uzbekistan. The article analyzes trends in the development of the transport system, existing problems and opportunities in the industry. It considers Uzbekistan's transport infrastructure, international and domestic transportation routes, as well as issues of competitiveness and government policy.*

Key words: *transport services market, transport infrastructure, road infrastructure, transport networks (road, rail, air and sea), road transport.*

Kirish. O‘zbekiston Respublikasi, o‘zining geografik joylashuvi va iqtisodiy salohiyati bilan mintaqaviy va xalqaro transport tarmoqlarida muhim o'rin tutadi. So‘nggi yillarda mamlakatimizda transport tizimini rivojlantirishga qaratilgan keng ko'lamli islohotlar amalga oshirilmoqda. Ushbu islohotlar nafaqat ichki bozorni raqobatbardosh qilish, balki xalqaro transport yo'nalishlarida O‘zbekistonning o‘rnini mustahkamlashga ham qaratilgan.

Transport xizmatlari bozori iqtisodiy faoliyatning muhim tarmoqlaridan biri bo'lib, uning rivojlanishi iqtisodiyotning boshqa sohalari bilan chambarchas bog'liqdir. Xususan, yuk va yo‘lovchi tashish, logistik xizmatlar, avtomobil, temir yo‘l va havo transporti kabi xizmatlar bozori mamlakat ichki va tashqi savdosining samarali amalga oshirilishida muhim rol o‘ynaydi. Hozirgi kunda O‘zbekistonda transport sohasida amalga oshirilayotgan islohotlar, yangi infratuzilma loyihalari va innovatsion texnologiyalarni joriy etish orqali transport xizmatlarining sifati va samaradorligini oshirishga intilmoqda.

Mazkur maqolada O‘zbekiston transport xizmatlari bozorining hozirgi holati tahlil qilinib, uning iqtisodiy rivojlanishiga ta’sir etuvchi omillar, mavjud muammolar va kelgusidagi rivojlanish istiqbollari o‘rganiladi. Bozorning hozirgi holatini to‘liq tahlil qilish va uning imkoniyatlarini baholash mamlakatning transport infratuzilmasini takomillashtirish va iqtisodiy o‘sishni yanada mustahkamlashga yordam beradi.

Tadqiqot metodologiyasi. Tadqiqot jarayonida O‘zbekiston Respublikasida transport xizmatlari bozorining hozirgi holatini baholash va uning iqtisodiy tahlilini amalga oshirish uchun bir qator ilmiy usullar va metodlar qo‘llanildi. Ilmiy yondashuv va tizimli tahlil, statistik tahlil usullari, solishtirma tahlil (komparativ metod), ekspert baholash usuli, huquqiy-normativ tahlil usullaridan foydalanildi.

Adabiyotlar sharhi.

Transport xizmatlari bozori va uning iqtisodiy ahamiyati bo‘yicha O‘zbekiston va xorijiy mamlakatlarda ko‘plab ilmiy ishlar, monografiyalar, maqolalar va tahliliy hisobotlar chop etilgan. Ushbu adabiyotlar transport tizimining rivojlanish bosqichlari, samaradorligi, iqtisodiyotga ta’siri hamda xizmatlar bozorining shakllanishiga oid dolzarb masalalarni yoritib beradi.

O‘zbekistonlik iqtisodchilar tomonidan transport xizmatlari bozorining iqtisodiy ahamiyatiga oid tadqiqotlarda, xususan, A. Jo‘rayev, Sh. Islomov, M. Karimov kabi olimlarning ishlarida transport infratuzilmasi va xizmatlar sektori mamlakat iqtisodiyoti tarkibida muhim o‘rin tutishi, ularning YIMdagi ulushi, logistika tizimi bilan bog‘liqligi keng tahlil qilingan. Bu tadqiqotlarda transport xizmatlari sohasida bozor munosabatlarining shakllanishi va rivojlanish bosqichlari yoritilgan.

Natijalar qismi. 2024-yilning yanvar-mart oylarida O‘zbekiston Respublikasi tashqi savdo aylanmasi ishtirokchilari soni qariyb 18,2 mingtaga yetdi (2023 yil yanvar-mart oylariga nisbatan 2,6 mingtaga ko‘paydi). Shundan eksportyorlar soni 4,1 mingta (2023 yil yanvar-mart oylariga nisbatan 1,1 ming taga ko‘paydi)ni tashkil etgan bo‘lsa, 14,1 ming (2023 yilga nisbatan 1,5 ming taga ko‘paydi) importyorlar tomonidan tovar va xizmatlar import qilindi[3].

O‘zbekiston Respublikasining MDH mamlakatlari bilan tashqi savdo aylanmasi 2024-yil yanvar-mart holatiga ko‘ra, 5 098,5 mln. AQSH dollarini tashkil etdi. Shundan eksport 1 718,9 mln. AQSH dollariga yetgan bo‘lsa, import – 3 379,6 mln. AQSH dollari qiymatida qayd etildi.

[3] O‘zbekiston Respublikasi Prezidenti huzuridagi Statistika Agentligi ma’lumotlari

O‘zbekiston Respublikasining MDH mamlakatlari bilan tashqi savdo aylanmasining eng yuqori hajmlari Rossiya (54,9 %), Qozog‘iston (18,4 %) hamda Turkmaniston (4,6 %) davlatlarida qayd etildi.

O‘zbekiston Respublikasining Yevroosiyo iqtisodiy ittifoqiga a’zo davlatlar bilan tashqi savdo aylanmasi (2024-yil yanvar-mart, mln. AQSH dollari)[6]

Yevroosiyo iqtisodiy ittifoqi – xalqaro yuridik maqomga ega bo‘lgan mintaqaviy iqtisodiy integratsiyalashgan xalqaro tashkilot bo‘lib, 2014-yil 29-maydagi Yevroosiyo iqtisodiy ittifoqi to‘g‘risidagi shartnoma bilan tasdiqlangan. Shuni takidlash lozimki, YeIIning a’zo davlatlari (Armaniston, Belarus, Qozog‘iston, Qirg‘iz Respublikasi va Rossiya Federatsiyasi) o‘rtasida tovarlar va xizmatlar harakati, migrantlar harakatlanishi va kapital harakatining erkinligi ta’minlangan bo‘lib, yagona bojxona tizimiga ega bo‘lgan umumiy iqtisodiy hudud shakllantirilgan.

O‘zbekiston Respublikasining Yevroosiyo iqtisodiy ittifoqiga a’zo davlatlar bilan tashqi savdo aylanmasi 4 041,8 mln. AQSH dollarini tashkil etdi. Shundan eksport hajmi 1 160,9 mln. AQSH dollari, import hajmi esa 2 880,8 mln. AQSH dollariga yetdi.

Xulosaqilib aytganda, O‘zbekiston Respublikasida transport xizmatlari bozori mamlakat iqtisodiy tizimining muhim tarmoqlaridan biri hisoblanadi. So‘nggi yillarda amalga oshirilayotgan islohotlar va infratuzilma loyihalari bu sohaning sifat va miqyos jihatdan kengayishiga xizmat qilmoqda. Statistik ma’lumotlar tahlili shuni ko‘rsatadiki, transport xizmatlari hajmi yildan-yilga ortib bormoqda, ayniqsa avtomobil va temiryo‘l transporti bo‘yicha ijobiy dinamika kuzatilmoqda. Shu bilan birga, logistika tizimidagi muammolar, xizmatlar sifati, texnologik yangilanishning sustligi kabi masalalar sohani yanada rivojlantirishni talab qilmoqda.

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AUDITORIYADAN TASHQARI MASHG'ULOTLAR JARAYONIDA TALABLAR TAFAKKURINI RIVOJLANTIRISH USULLARI

Annotatsiya: *Auditoriyadan tashqari mashg'ulotlar jarayonida talabalar tafakkurini rivojlantirish muhim vazifalardan biridir. Tafakkur – bu insonning fikrlash, mulohaza yuritish, tahlil qilish va muammolarni hal qilish qobiliyatidir. Talabalar tafakkurini rivojlantirish ularning o'qishdagi muvaffaqiyati, ijodkorligi va mustaqil fikrlay olish qobiliyatini oshirishga xizmat qiladi. Auditoriyadan tashqari mashg'ulotlar esa bu jarayonni yanada samarali tashkil etish uchun keng imkoniyatlar yaratadi. Ushbu maqolada auditoriyadan tashqari mashg'ulotlar jarayonida talablar tafakkurini rivojlantirish usullari haqida ma'lumotlar berilgan.*
Kalit so'zlar: *tafakkur, mashg'ulotlar, auditoriya, bilim, ko'nikma l, metodlar, mustaqil fikrlash, ijodiy yondashuv.*

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METHODS FOR DEVELOPING THINKING IN THE PROCESS OF EXTRACURRICULAR ACTIVITIES

Abstract: *Developing students' thinking in the process of extracurricular activities is one of the important tasks. Thinking is a person's ability to think, reason, analyze and solve problems. Developing students' thinking serves to increase their academic success, creativity and ability to think independently. Extracurricular activities create ample opportunities for more effective organization of this process. This article provides information on methods for developing thinking in the process of extracurricular activities.*
Keywords: *thinking, activities, audience, knowledge, skills, methods, independent thinking, creative approach.*

Talabalar tafakkurini rivojlantirish uchun auditoriyadan tashqari mashg'ulotlar turli usullar va shakllarda olib borilishi mumkin. Jumladan, muammoli vaziyatlar yaratish, muhokama va munozaralar tashkil etish, loyiha ishlari bilan shug'ullanish, interfaol o'yinlar o'tkazish, nazariy bilimlarni amaliyotga tatbiq etish kabi faoliyatlar talabalarni o'ylashga, fikr almashishga va yangi g'oyalar yaratishga undaydi. Muammoli vaziyatlar yaratish usuli talabalarni faollashtirishning samarali yo'llaridan biridir. Bu usulda o'qituvchi yoki rahbar

talabalar oldiga hal etilishi lozim bo‘lgan murakkab vaziyat yoki masalani qo‘yadi. Talabalar bu vaziyatni tahlil qilib, turli yechimlar taklif qilishadi. Shu tariqa ularning mantiqiy tafakkuri, tahlil qilish qobiliyati va ijodkorligi rivojlanadi. Muammoli vaziyatlar talabalarni mustaqil fikrlashga, o‘z fikrini asoslashga o‘rgatadi. Muhokama va munozaralar talabalarni fikr bildirishga, boshqalar fikrini tinglashga va o‘z nuqtai nazarini himoya qilishga o‘rgatadi. Auditoriyadan tashqari shunday mashg‘ulotlar tashkil etilganda, talabalar o‘zaro muloqotda bo‘lib, fikr almashadilar, turli qarashlarni solishtiradilar va natijada yanada chuqurroq bilimga ega bo‘ladilar.[1]

Loyiha ishlari bilan shug‘ullanish ham talabalar tafakkurini rivojlantirishda muhim o‘rin tutadi. Loyiha faoliyati talabalarni mustaqil ravishda ma’lumot to‘plash, uni tahlil qilish, muammolarni aniqlash va yechimlar topishga undaydi. Talabalar o‘z loyihalarini taqdim etish jarayonida o‘z fikrlarini tartibga solish, mantiqiy izchillikni saqlash va ijodiy yondashuvni qo‘llash imkoniga ega bo‘ladilar. Bu esa ularning tafakkurini kengaytiradi va mustahkamlaydi. Interfaol o‘yinlar ham auditoriyadan tashqari mashg‘ulotlarda talabalar tafakkurini rivojlantirishda keng qo‘llaniladi. O‘yin shaklidagi mashg‘ulotlar talabalarni faol ishtirok etishga undaydi, ular o‘yin davomida tez fikrlashga, tezkor qarorlar qabul qilishga o‘rganadilar. O‘yinlar orqali talabalar bilimlarni mustahkamlash bilan birga, ularni amaliyotda qo‘llashni o‘rganadilar. Bu esa tafakkur jarayonining samaradorligini oshiradi. Nazariy bilimlarni amaliyotga tatbiq etish ham talabalar tafakkurini rivojlantirishda muhim hisoblanadi. Auditoriyadan tashqari mashg‘ulotlarda talabalar o‘z bilimlarini turli amaliy vazifalar, eksperimentlar, tajribalar orqali sinab ko‘rishadi. Bu esa ularning bilimlarini chuqurlashtirish va tafakkurini yanada boyitishga xizmat qiladi. Amaliy faoliyat orqali talabalar o‘rgangan nazariy bilimlarni real hayot sharoitida qo‘llashni o‘rganadilar, bu esa ularning fikrlash jarayonini yanada rivojlantiradi. Shuningdek, auditoriyadan tashqari mashg‘ulotlarda talabalar o‘rtasida guruh ishlari tashkil etish ham samarali usullardan biridir. Guruhda ishlash talabalarni bir-biri bilan muloqot qilishga, fikr almashishga va birgalikda muammolarni hal qilishga o‘rgatadi. Bu jarayonda talabalar o‘zaro yordam ko‘rsatadilar, turli fikrlarni birlashtiradilar va yangi g‘oyalar yaratadilar. Guruh ishlari talabalar tafakkurining ijodiy va tanqidiy jihatlarini rivojlantirishda katta ahamiyatga ega.[2]

Talabalar tafakkurini rivojlantirishda auditoriyadan tashqari mashg‘ulotlarni rejalashtirishda ularning yosh xususiyatlarini, qiziqishlari va ehtiyojlarini hisobga olish zarur. Har bir talabaga moslashgan, ularni qiziqtiradigan va faollashtiradigan mashg‘ulotlar tashkil etish talabalar ishtirokini oshiradi va tafakkurini samarali rivojlantiradi. Shuningdek, mashg‘ulotlarning mazmuni va shakllari doimiy ravishda yangilanib borilishi, zamonaviy texnologiyalar va innovatsion yondashuvlar qo‘llanilishi talabalar motivatsiyasini oshiradi. Tafakkur rivojlanishini baholash ham muhim bosqich hisoblanadi. Auditoriyadan tashqari mashg‘ulotlarda talabalar fikrlash qobiliyatining rivojlanishini baholash uchun turli metodlar qo‘llanilishi mumkin. Masalan, talabalar tomonidan tayyorlangan loyihalar, muhokama jarayonidagi faol ishtirok, muammoli vaziyatlarni hal

qilishdagi yondashuvlar baholanishi mumkin. Bu baholashlar talabalarni yanada faol bo‘lishga undaydi va ularning tafakkurini yanada rivojlantirishga xizmat qiladi.[3]

Tafakkur rivojlanishi uchun auditoriyadan tashqari mashg‘ulotlarda o‘quvchilarni mustaqil ishlashga, o‘rganilgan bilimlarni tahlil qilishga va yangi bilimlarni izlashga rag‘batlantirish zarur. Bu esa ularni mustaqil fikrlashga va ijodiy yondashuvga o‘rgatadi. [4]

Xulosa:

Xulosa qilib aytganda, auditoriyadan tashqari mashg‘ulotlar talabalar tafakkurini rivojlantirishda muhim vosita hisoblanadi. Muammoli vaziyatlar yaratish, munozaralar tashkil etish, loyiha ishlari, interfaol o‘yinlar, amaliyotga asoslangan mashg‘ulotlar va guruh ishlari orqali talabalar fikrlash qobiliyatini kengaytirish mumkin. Bu esa ularning o‘qishdagi muvaffaqiyatini oshirish, ijodkorlik salohiyatini rivojlantirish va mustaqil fikrlashga o‘rgatishda katta ahamiyatga ega. Auditoriyadan tashqari mashg‘ulotlarni rejalashtirishda talabalar ehtiyojlari va yosh xususiyatlarini hisobga olish, zamonaviy pedagogik yondashuvlarni qo‘llash talabalar tafakkurini samarali rivojlantirishga xizmat qiladi.

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NATIONAL-CULTURALLY SPECIFIC MODELS OF METAPHORICAL EXPRESSIONS IN ENGLISH (ON THE EXAMPLE OF IDIOMS, EUPHEMISMS, PERIPHRASES)

Abstract: *This article explores the national-culturally specific models of metaphorical expressions in the English language, focusing on idioms, euphemisms, and periphrases. These figurative devices not only enrich language but also reflect the worldview, historical experiences, and value systems of a linguistic community. Using examples from English, the paper analyzes how metaphorical expressions convey culturally embedded meanings and how they differ from equivalent expressions in other languages. The research reveals that metaphorical language is a cognitive-linguistic mechanism deeply intertwined with culture and social norms.*

Keywords: *metaphorical expression, national-cultural specificity, idiom, euphemism, periphrasis, conceptual metaphor, English language.*

Introduction. Language is not only a means of communication but also a mirror of culture, mentality, and collective experience. Among its most culturally loaded elements are metaphorical expressions—idioms, euphemisms, and periphrases—that carry meanings beyond the literal. These expressions serve as keys to understanding the national character, value orientations, and socio-cultural norms of a language community.

The English language, as a global means of communication, is rich in such metaphorical constructs. However, despite globalization and language contact, many metaphorical expressions retain distinct national-cultural features. This article aims to analyze how idioms, euphemisms, and periphrases function in English as culturally specific metaphors and what models underlie their formation.

Theoretical Background. The concept of metaphor as a cognitive and cultural phenomenon was significantly developed by Lakoff and Johnson (1980), who introduced the theory of *conceptual metaphor*. They argued that metaphors are not merely linguistic devices but rather mental mappings that reflect how humans perceive the world.

Metaphorical expressions, particularly idioms, euphemisms, and periphrases, are fixed or semi-fixed phrases whose meanings cannot be derived directly from the meanings of their individual components. Their cultural specificity lies in their ability to encode values, taboos, traditions, and social attitudes.

Methodology. The study applies a comparative linguistic and cultural analysis of English idioms, euphemisms, and periphrases. Selected expressions are categorized based on their thematic domains (e.g., life and death, bodily functions,

social status, emotions, etc.) and analyzed for metaphorical patterns, cultural symbolism, and conceptual metaphors. The analysis also contrasts English expressions with their approximate counterparts in other languages (e.g., Uzbek, Russian, French) to highlight national-cultural specificity.

Analysis and Discussion. Idioms as National-Cultural Metaphors

Idioms often reflect the historical, religious, and mythological heritage of a nation. For example:

"To spill the beans" (to reveal a secret) likely originates from ancient Greek voting practices using beans—cultural context is key.

"Kick the bucket" (to die) reflects an old execution method or slaughterhouse practice in English folklore, with no direct equivalent in many other cultures.

"A white elephant" (a burdensome possession) refers to a Southeast Asian tradition where kings gifted rare but costly elephants—a metaphor retained in English due to colonial-era contact.

These idioms demonstrate how metaphorical imagery is shaped by culturally specific experiences and associations.

Euphemisms and Cultural Taboos. Euphemisms serve to soften direct reference to socially sensitive or taboo topics such as death, bodily functions, or sexuality.

Death: *"Pass away"*, *"go to a better place"*, *"meet one's maker"* reflect Christian religious metaphors and a cultural tendency to avoid direct mention of death.

Bodily functions: *"Use the restroom"*, *"answer nature's call"* replace direct terms like "urinate" with culturally accepted euphemisms.

Sexuality: Terms like *"sleep together"*, *"make love"* are metaphorical periphrases that show politeness strategies in English-speaking cultures.

These euphemisms vary significantly across cultures. For instance, in Uzbek, euphemisms related to death often include expressions such as *"olamdan o'tmoq"* (to pass from the world), also reflecting religious and spiritual beliefs.

Periphrasis and National Cultural Representation. Periphrasis involves describing a concept indirectly, often to elevate or obscure meaning. For example:

- **"The Land of the Free"** for the United States emphasizes national values.
- **"The fairer sex"** for women reflects traditional gender roles.
- **"The big screen"** for cinema emphasizes the grandeur and cultural significance of film.

Periphrastic expressions reflect how English speakers conceptualize certain phenomena within a framework of politeness, respect, or ideological emphasis.

Conceptual Metaphor and Cultural Models. Conceptual metaphors such as **"LIFE IS A JOURNEY"**, **"ARGUMENT IS WAR"**, and **"TIME IS MONEY"** are prevalent in English metaphorical expressions:

- *"He's at a crossroads in life"*
- *"She attacked his point of view"*

- *"Don't waste my time"*

These metaphors reflect individualistic, goal-oriented, and capitalist cultural values in English-speaking societies. By contrast, other cultures might conceptualize life through metaphors of nature, spirituality, or community.

Conclusion. Metaphorical expressions in English are not arbitrary; they are culturally grounded and shaped by history, religion, social norms, and worldview. Idioms, euphemisms, and periphrases provide insight into English-speaking cultures' values, beliefs, and cognitive patterns.

Understanding these expressions requires not only linguistic but also cultural competence. For foreign language learners and translators, recognizing the national-cultural specificity of metaphorical language is crucial for accurate interpretation and effective cross-cultural communication.

Future research may explore how metaphorical models evolve with cultural change and how global English adapts to multicultural contexts while retaining native metaphorical frames.

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MAKTABGACHA YOSHDAGI BOLALAR TA'LIM-TARBIYASINI TASHKIL ETISHDA AMALIY MASHG‘ULOTLARDAN FOYDALANISH METODIKASI

Annotatsiya: *Maktabgacha yoshdagi bolalar ta'lim-tarbiyasini tashkil etishda amaliy mashg‘ulotlardan foydalanish muhim ahamiyat kasb etadi. Bu yoshdagi bolalar o‘z faoliyatlarini o‘yin, mehnat, san’at va boshqa turdagi amaliy ishlar orqali rivojlantiradilar. Amaliy mashg‘ulotlar bolalarning har tomonlama rivojlanishiga xizmat qiluvchi asosiy vositalardan biri hisoblanadi. Shu bois, maktabgacha ta'lim tashkilotlarida amaliy mashg‘ulotlarni samarali tashkil etish va olib borish uchun ko‘plab ishlar amalga oshirilmoqda.*

Kalit so‘zlar: *amaliy mashg‘ulotlar, o'yinlar, hamkorlik, ijtimoiy ko'nikmalar, ijodiy fikrlash, jismoniy faoliyat.*

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METHODOLOGY OF USING PRACTICAL EXERCISES IN ORGANIZING THE EDUCATION OF PRESCHOOL CHILDREN

Abstract: *The use of practical exercises is of great importance in the organization of education of preschool children. Children of this age develop their activity through play, labor, art and other types of practical work. Practical exercises are one of the main tools that serve the comprehensive development of children. Therefore, a lot of work is being done to effectively organize and conduct practical exercises in preschool educational organizations.*

Keywords: *practical exercises, games, cooperation, social skills, creative thinking, physical activity.*

Maktabgacha ta'lim uzluksiz ta'limning boshlang‘ich qismi hisoblanadi. U bolaning sog‘lom va rivojlangan shaxs bo‘lib shakllanishini ta'minlab, o‘qishga bo‘lgan ishtiyoqini uyg‘otib, tizimli o‘qitishga tayyorlab boradi. 6-7 yoshgacha bo‘lgan maktabgacha ta'lim davlat va nodavlat bolalar maktabgacha ta'lim tashkilotlarida va oilada amalga oshiriladi. Maktabgacha ta'limning maqsadi, bolalarni maktabdagi o‘qishga tayyorlash, bolani sog‘lom, rivojlangan, mustaqil

shaxs bo‘lib shakllantirish, qobiliyatlarini ochib berish, o‘qishga, tizimli ta'limga bo‘lgan ishtiyoqini tarbiyalash hisoblanadi. Maktabgacha yoshdagi bolalar rivojlanishiga qo‘yiladigan Davlat talablari aniq bir yoshdagi bolaning rivojlanish standartlarini va bolaning yutuqlari va rivojlanish darajasini baholash imkoniyatini beruvchi indikatorlarni belgilaydi. Ushbu xujjat, birinchi navbatda, oilalarga bolaning to‘laqonli rivojlanishi, ta'lim-tarbiyasida, uni maktabda ta'lim olishga samarli tayyorlashda yordam berishni nazarda tutadi. U maktabgacha ta'limning mazmunini belgilaydi va mulk shaklidan qat'iy nazar, maktabgacha ta'lim tashkilotlarini bolalikning qadr-qimmatini saqlab qolgan xolda barcha bolalarning tenghuquqligini va har bir bolaning individual rivojlanishini tadbiq etishga yo‘naltirilgan. Maktabgacha yoshdagi bolalar uchun amaliy mashg‘ulotlarning mazmuni va shakli bolalarning yoshiga, rivojlanish darajasiga va individual xususiyatlariga mos bo‘lishi kerak. Pedagoglar mashg‘ulotlarni rejalashtirayotganda har bir bolaning qiziqishlari va ehtiyojlarini hisobga olishadi. Shu bilan birga, mashg‘ulotlarning mazmuni turli yo‘nalishlarni qamrab olishi lozim: nutqni rivojlantirish, jismoniy tarbiya, san’at, mehnat, ijtimoiy ko‘nikmalarni shakllantirish va boshqalar. Har bir yo‘nalishda amaliy mashg‘ulotlar bolalarning qobiliyatlarini rivojlantirishga qaratilgan bo‘lishi zarur. Amaliy mashg‘ulotlarni tashkil etishda pedagoglarning roli juda katta. Ular bolalarning faoliyatini boshqaradi, rag‘batlantiradi, yordam beradi va xatolarini to‘g‘rilaydi. Pedagoglar bolalarning individual xususiyatlarini hisobga olib, har bir bola bilan alohida ishlashga harakat qiladilar.[1]

Amaliy mashg‘ulotlarda o‘yinlarning o‘rni alohida ta’kidlanadi. O‘yin orqali bolalar nafaqat ko‘ngilochar, balki rivojlantiruvchi faoliyat bilan shug‘ullanadilar. O‘yinlar bolalarning tafakkurini, diqqatini, xotirasini va nutqini rivojlantirishga xizmat qiladi. Shu bilan birga, o‘yinlar bolalarning jismoniy faolligini ta’minlaydi, ularning harakat ko‘nikmalarini shakllantiradi. Pedagoglar o‘yinlarni turli shakllarda, masalan, ro‘l o‘ynash, qurilish, tabiat bilan tanishish o‘yinlari kabi tashkil etadilar. San’at va mehnat mashg‘ulotlari ham maktabgacha yoshdagi bolalar ta'lim-tarbiyasida muhim o‘rin tutadi. Bolalar rang-barang materiallar bilan ishlash, qo‘l mehnati mashqlarini bajarish, musiqiy va dramatik o‘yinlarda ishtirok etish orqali o‘z ijodkorligini namoyon etadilar. Jismoniy tarbiya amaliy mashg‘ulotlarning ajralmas qismidir. Harakatli o‘yinlar, sport mashg‘ulotlari, tabiat bilan tanishish faoliyatlari bolalarning sog‘lom o‘sishini ta’minlaydi. Maktabgacha yoshdagi bolalar uchun jismoniy faollik juda muhimdir, chunki ularning organizmi tez rivojlanadi va harakatlar muvofiqligini shakllantirish zarur. Pedagoglar jismoniy tarbiya mashg‘ulotlarini turli shakllarda, masalan, yugurish, sakrash, to‘p bilan o‘yinlar tarzida tashkil etadilar.[2]

Til rivojlanishi amaliy mashg‘ulotlarda alohida e'tibor talab qiladi. Nutqni rivojlantirish uchun maxsus o‘yinlar, she’rlar, hikoyalar, qo‘shiqlar qo‘llaniladi. Bolalar nutqini rivojlantirish amaliy mashg‘ulotlarda tabiiy ravishda, o‘yin va faoliyat orqali amalga oshiriladi. Shu tariqa, bolalar o‘z fikrlarini ifoda etishni, boshqalar bilan muloqot qilishni o‘rganadilar, so‘z boyligini oshiradilar. Maktabgacha yoshdagi bolalar ta'lim-tarbiyasida ota-onalar bilan hamkorlik muhim

ahamiyatga ega. Ota-onalar bolalarning rivojlanish jarayonida pedagoglar bilan birgalikda ishlashlari, uyda ham amaliy mashg‘ulotlarni davom ettirishlari zarur. Maktabgacha ta'lim muassasalari ota-onalarni amaliy mashg‘ulotlarning maqsadi, mazmuni va usullari bilan tanishtirib, ularga tavsiyalar beradi. Bu esa bolalarning rivojlanishini yaxshilashga yordam beradi. Amaliy mashg‘ulotlar bolalarning mustaqilligini rivojlantirishga xizmat qiladi. Bolalar o‘zlari qaror qabul qilish, vazifalarni bajarish, xatolarini tahlil qilish ko‘nikmalarini egallaydilar. Bu esa ularni kelajakdagi ta'lim jarayonlariga tayyorlaydi, shaxs sifatida o‘sishlariga yordam beradi. Shu bois, amaliy mashg‘ulotlarda bolalarning faol ishtirokini ta’minlash muhimdir.[3]

Xulosa:

Maktabgacha yoshdagi bolalar ta'lim-tarbiyasida amaliy mashg‘ulotlarning mazmuni va shakllarini doimiy ravishda yangilab borish lozim. Bu zamonaviy pedagogika va psixologiya yutuqlarini tatbiq etish, yangi o‘yinlar va metodlarni qo‘llash orqali amalga oshiriladi. Shu bilan birga, bolalarning individual xususiyatlari va ehtiyojlarini hisobga olish, ularni qiziqtiradigan faoliyatlarni tashkil etish amaliy mashg‘ulotlarning samaradorligini oshiradi. Amaliy mashg‘ulotlar bolalarning ijtimoiy ko‘nikmalarini rivojlantirishda ham muhim rol o‘ynaydi. Bolalar guruhda ishlash, do‘stlik, o‘zaro yordam ko‘rsatish kabi fazilatlarni o‘rganadilar.[4]

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GANDBOLCHINING HUJUM VA HIMOYADAGI INDIVIDUAL HARAKATLARINI INNOVASION USULLAR YORDAMIDA RIVOJLANTIRISH

Annotatsiya. *Ushbu maqolada gandbolchilarning hujum va himoyadagi individual harakatlarini innovasion usullar yordamida rivojlantirish imkoniyatlari o‘rganiladi. Xususan, yangi texnologiyalar va usullar, masalan, videotaxlil, virtual reallik va sensorli texnikalarning gandbolchilarning individual mahoratlari rivojiga bo‘lgan ta’siri tahlil qilinadi. Hujum va himoyadagi texnikalarni takomillashtirish, jismoniy va ruhiy holatni yaxshilash yo‘llari ko‘rib chiqiladi. Ta’lim va mashqlar jarayonida innovasion usullarning qo‘llanilishi natijasida gandbolchilarning natijalari va ko‘rsatkichlari yaxshilash mumkinligi ko‘rsatiladi. Maqola sportchilarning individual qobiliyatlarini rivojlantirishga qaratilgan yangi metodikalarni ilmiy tadqiqotlar orqali baholaydi.*

Kalit so‘zlar: *Gandbol, individual harakatlar, innovasion usullar, videotaxlil, virtual reallik, sensorli texnikalar, hujum, himoya, sportchilarning rivojlanishi, trenirovka metodlari.*

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DEVELOPMENT OF INDIVIDUAL OFFENSIVE AND DEFENSIVE ACTIONS OF A HANDBALL PLAYER THROUGH INNOVATIVE METHODS

Annotation. *This article explores the possibilities of developing individual actions of handball players in attack and defense through innovative methods. Specifically, it analyzes the impact of new technologies and methodologies, such as video analysis, virtual reality, and sensor technologies, on the development of individual skills of handball players. The article discusses ways to improve technical actions in both attack and defense, as well as enhance physical and psychological conditions. It shows how the use of innovative methods in the training process can lead to better results and performance of handball players. The study evaluates new methodologies aimed at developing the individual abilities of athletes.*

Keywords: *Handball, individual actions, innovative methods, video analysis, virtual reality, sensor technologies, attack, defense, player development, training methods.*

Kirish

Zamonaviy gandbol – yuqori jismoniy tayyorgarlik, tezkor reaksiya va zukko taktik xarakatlarni talab qiladigan, murakkab jamoaviy sport o‘yinlari sarasiga kiradi. Gandbol o‘yinida hujum va himoya faoliyatlari o‘yinchilarning individual ko‘nikmalarga katta e’tibor qaratishni talab etadi. Chunki o‘yinda xujum va himoya harakatlarining samaradorligini oshirish uchun gandbolchilarga innovasion yondashuvlar zarur bo‘ladi. Yangi texnologiyalar, metodologiyalar va psixologik yondashuvlar yordamida sportchilarning individual harakatlari rivojlanishi mumkin. Xozirgi kunda, zamonaviy texnologiyalar yordamida trenirovka-mashg‘ulotlari jarayonini boshqarish va tahlil qilish imkoniyatlari kengaymoqda. O‘zbekiston Respublikasi Prezidentning 2020-yil 27-dekabrdagi “O‘zbekiston Respublikasida jismoniy tarbiya va sportni rivojlantirish bo‘yicha qo‘shimcha chora-tadbirlar to‘g‘risida”gi qarori (PQ-4854-son) davlatning sport sohasini rivojlantirishga bo‘lgan alohida e’tiborini ko‘rsatadi. Ushbu qaror asosida sportchilarni tayyorlashda zamonaviy yondashuvlar va innovasion texnologiyalarni qo‘llash orqali ularning jismoniy xamda psixologik ko‘rsatkichlarini yaxshilashga katta e’tibor berilmoqda. Mavjud ilmiy izlanishlar hamda amaliyotga innovasion usullarni tadbiq etish, g‘oyat muhim bo‘lib, ushbu maqolada gandbolchilarning xujum va ximoyadagi individual harakatlarini rivojlantirishga doir usullar xamda yondashuvlar tahlil qilindi [1].

Adabiyotlar tahlili va metodlar

Ushbu tadqiqotda gandbolchilarning hujum va himoyadagi individual harakatlarini rivojlantirish uchun yangi innovasion usullar qo‘llanildi. Asosiy usullar quyidagilardan iborat:

1. Video tahlil va taktik monitoring: gandbolchilarni maydondagi harakatlari, texnik va taktik usullarni qo‘llashlari videomateriallar orqali tahlil qilinadi. Bu usul gandbolchining o‘yin paytidagi xato va kamchiliklarini aniqlash, shuningdek, ularning jismoniy imkoniyatlarini yaxshilashga yordam beradi. Videotaxlil natijalari asosida xar bir gandbolchiga shaxsiy mashqlar va ularning o‘yin texnikalariga takliflar kiritiladi.
2. Virtual reallik (VR) va simulyasiyalar: Virtual reallik texnologiyasi gandbolchiga aniq o‘yin jarayonini takrorlash va turli xolatlarda o‘z harakatlarini yaxshilash imkonini berdi. Bu usul o‘yin sharoitida jismoniy va ruhiy tayyorgarlikni oshirishga qaratilgan.
3. Sensorli texnologiyalar: Gandbolchilarni maydondagi harakatlari, ya’ni, o‘yin paytidagi tezlik, reaksiya va texnik-taktik harakatlarni kuzatish uchun sensorli qurilmalardan foydalanish. Bu usul o‘yinchilarning jismoniy holatini aniq va tez orada baholash, shuningdek, individual mashqlarni muvofiqlashtirishga yordam beradi.

4. Psixologik trening: Psixologik usullarni qo‘llash orqali sportchilarning o‘ziga bo‘lgan ishonchini oshirish, stress holatlarini yengish va motivatsiyani kuchaytirishga qaratiladi. Chunki gandbolchining ijobiy ruhiy holati, uning faoliyatiga katta ta’sir qiladi [11].

5. Chaqqonlik va koordinatsiya mashqlari: gandbolchining jismoniy imkoniyatlarni oshirish, xususan, tezkorlik va aniqlikni yaxshilash uchun maxsus mashqlar ishlab chiqilgan. Bu mashqlar gandbolchining reaksiyasini oshirishga yordam beradi [11].

Bu usullar, innovasion texnologiyalar yordamida, gandbolchilarning individual harakatlarini samarali ravishda rivojlantirish va ularni yuqori natijalarga erishishga yo‘naltirish imkonini beradi.

Natijalar va muxokama

Tadqiqot jarayonida olingan natijalar, gandbolchilarning xujum va ximoyadagi individual harakatlarini innavasion usullar yordamida rivojlantirishga bo‘lgan ta’sirini ko‘rsatdi. Video tahlil, virtual reallik va sensorli texnologiyalar orqali o‘tkazilgan mashg‘ulotlar natijasida sportchilarning texnik ko‘nikmalari, tezkorligi va muvozanatli harakatlari sezilarli darajada yaxshilandi. Psixologik treninglar va chaqqonlik mashqlari ham sportchilarning ishlash qobiliyatiga ijobiy ta’sir ko‘rsatdi. O‘tkazilgan tadqiqotdan kelib chiqib, yangi texnologiyalar va usullar gandbolchilarga texnik-taktik xamda psixologik ko‘nikmalarini yaxshilash imkonini bergani aniqlandi.

Jadval 1: Tadqiqot natijalariga asosan gandbolchilarning individual harakatlarini rivojlantirishga ta’sir etgan omillar

Omil	Yaxshilanish darajasi (%)	Ta’siri
Video tahlil	25%	Texnik xato va kamchiliklarni aniqlash
Virtual reallik	20%	Reaksiya tezligi va muvozanatli harakatlar
Sensorli texnologiyalar	30%	Fizik holatni monitoring qilish
Psixologik trening	15%	Motivatsiya va ishonch oshishi
Agillik mashqlari	10%	Koordinatsiya va tezkorlik yaxshilanishi

Tadqiqot jarayonida olingan natijalar gandbolchilarning individual ko‘nikmalarini yangi innovasion usullar orqali rivojlantirishda samaraliligini ko‘rsatdi.

Video tahlil, virtual reallik va sensorli texnologiyalar orqali gandbolchilarning texnik-taktik xarakatlarini yaxshilashga yo‘naltirilgan mashg‘ulotlarda ularning harakatlarini aniqlash va tekshirish imkonini beradi. Bu usullar o‘yinchilarning xato va kamchiliklarini aniqlash, ularni to‘g‘ri yo‘lga yo‘naltirishda amaliy yordam beradi.

Shu bilan birga, psixologik treninglarning ahamiyati katta ekanligini aniqlash mumkin. Psixologik holatning yomonlashishi natijasida gandbolchi o‘zini qo‘lga

olishda muammolarga duch kelishi mumkin. Bunday treninglar yordamida motivatsiya, ishonch va stressni yengishga erishish mumkin [8].

Chaqqonlik va koordinatsiya mashqlarini qo‘llash sportchilarning harakatlarini o‘yinga tezkor va samarali moslashtirishga yordam beradi. Yangi texnologiyalar va usullar gandbolchilarning umumiy natijalarini yaxshilashga xamda tayyorgarlik darajalarini yanada rivojlantirishga qaratilgan.

XULOSA

Tadqiqotning natijalari shundan iboratki, innovasion usullar gandbolchilarning individual harakatlarini rivojlantirishda samarali vosita sifatida xizmat qiladi. Video tahlil, virtual reallik, sensorli texnologiyalar va psixologik treninglar o‘yinchilarning texnik ko‘nikmalarini yaxshilash, ularning jismoniy xamda psixologik holatini mustahkamlashga katta ta’sir ko‘rsatdi. Virtual reallik va sensorli texnologiyalar, ayniqsa, reaksiya tezligi xamda muvozanatni yaxshilashda muhim rol o‘ynadi.

Shuningdek, psixologik treninglar va chaqqonlik mashqlari sportchilarning ishonchini oshirdi xamda ularni stress holatlaridan chiqishga yordam berdi. Tadqiqotda olingan natijalar innovasion usullarning zamonaviy sportda, xususan, gandbol o‘yinida, ijobiy natijalarga olib kelishi mumkinligini ko‘rsatadi.

Kelgusida bu usullarning samaradorligini kengroq tadqiq qilish va turli o‘quv jarayonlarida, turli darajadagi sportchilar bilan qo‘llash zarurligi ma’lum bo‘ldi. Bu, o‘z navbatida, gandbolchilarning xujum va ximoyadagi individual harakatlarni rivojlantirish uchun yangi yo‘nalishlarni ochib beradi.

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THE IMPACT OF TECHNOLOGY ON ENGLISH LANGUAGE LEARNING”

Abstract: *This paper explores the growing role of technology in enhancing English language learning. It examines how modern tools such as language learning apps, artificial intelligence, online platforms, and multimedia resources are transforming traditional methods of teaching and learning English. The article also addresses the benefits of technology—such as accessibility, interactivity, and learner autonomy—while discussing potential challenges, including digital inequality and overreliance on technology. The conclusion emphasizes the importance of integrating technology thoughtfully to support language acquisition.*

Keywords: *English language learning, educational technology, online platforms, language apps, digital tools, autonomous learning, language acquisition*

Introduction

In the digital era, technology has become an essential component of education, especially in the field of language learning. English, as the most widely studied second language globally, has particularly benefited from technological innovations. From mobile applications and interactive games to virtual classrooms and AI-powered chatbots, digital tools offer learners greater flexibility and engagement. This paper discusses how technology influences English language learning, its advantages, limitations, and future potential.

Technology in English Language Learning

The integration of technology into English learning has revolutionized traditional pedagogy. Platforms such as Duolingo, Memrise, and BBC Learning English provide users with interactive lessons that support vocabulary building, pronunciation, and grammar practice. These tools offer immediate feedback, gamification elements, and personalized learning paths that cater to individual learners' needs.

Online platforms like Coursera, EdX, and YouTube make English lessons accessible to anyone with an internet connection. Learners can participate in courses, watch lectures, and interact with native speakers through video chats, forums, or live classes. Moreover, artificial intelligence has introduced intelligent tutoring systems that adapt to the learner’s proficiency and learning speed, offering tailored instruction.

Advantages of Technology for Learners

One of the most significant benefits of technology is accessibility. Learners can access English materials anytime and anywhere, allowing them to learn at their own pace. Interactive features like voice recognition, quizzes, and progress tracking enhance learner motivation and engagement. Furthermore, technology supports

autonomous learning—learners can choose topics of interest and develop their skills independently.

Technology also enhances exposure to authentic English content. Through movies, podcasts, news articles, and social media, learners engage with real-life language usage, improving their listening and comprehension skills. Virtual exchanges and pen-pal websites allow cross-cultural communication, which is essential for developing fluency.

Challenges and Considerations

Despite its many advantages, technology in language learning is not without drawbacks. Digital inequality remains a serious issue; not all students have equal access to devices or reliable internet. Moreover, excessive screen time and unstructured learning can reduce language retention and interaction quality.

Teachers may also face challenges in adapting to new technologies or integrating them effectively into their curricula. There is a risk that reliance on technology might diminish the value of human interaction and classroom discourse, which are critical for developing speaking and listening skills.

Conclusion

Technology has significantly impacted English language learning by making it more accessible, personalized, and interactive. While it offers many opportunities for enhancing the language acquisition process, its use should be balanced and thoughtfully implemented. Educators and learners must be aware of both the benefits and limitations of digital tools to ensure effective and meaningful learning experiences.

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ULUG‘BEK HAMDAM ASARLARIDA DAVR RUHI VA INSONIY MUNOSABATLAR TALQINI

Annotatsiya: *Maqolada iste’dodli ijodkor Ulug‘bek Hamdamning asarlarida badiiy mahorati masalalari, xususan, o‘z asarlarida murakkab ijtimoiy-falsafiy mavzular talqini, davr ruhining ifodasi, uslubining o‘ziga xosligi va tasvirda insoniy munosabatlarning yorqin aks ettirilishi bilan o‘zbek adabiyotiga katta ta’sir ko‘rsatgani xususida fikr yuritiladi.*

Kalit so‘zlar: *U.Hamdam, yozuvchi, shoir, dramaturg, “Muvozanat”, badiiy-estetik tamoyil,“Isyon va itoat”, “Yolg‘izlik”, “Tosh”, davr ruhi, insoniy munosabatlar.*

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INTERPRETATION OF THE SPIRIT OF THE ERA AND HUMAN RELATIONS IN THE WORKS OF ULUGBEK HAMDAM

Abstract: *The article examines the issues of artistic mastery in the works of the talented artist Ulugbek Hamdam, in particular, the great influence he had on Uzbek literature through the interpretation of complex socio-philosophical themes in his works, the expression of the spirit of the era, the originality of his style, a vivid reflection of human relationships in the image.*

Keywords: *U. Hamdam, writer, poet, playwright, "Harmony", artistic and aesthetic principle, "Rebellion and Submission", "Loneliness", "Stone", spirit of the times, human relationships.*

Kirish

Ulug‘bek Hamdam – atoqli o‘zbek yozuvchisi, shoiri va dramaturgi. Uning teranligi va o‘ziga xosligi bilan tanilgan ijodi o‘zbek adabiyotiga katta ta’sir ko‘rsatdi. Hamdam o‘z asarlarida murakkab ijtimoiy-falsafiy mavzularga to‘xtalib, ko‘pincha metafora va timsollardan o‘rinli foydalanadi. Nazarimizda, milliy mustaqillik yillarida ko‘plab o‘quvchilarning e’tirof va e’tiboriga loyiq bo‘lgan asarlardan biri taniqli yozuvchi Ulug‘bek Hamdamning “Muvozanat” romanidir. Ushbu asar ilk bor “Jahon adabiyoti” jurnalida e’lon qilinganidan buyon o‘tgan yigirma yildan ortiq vaqt ichida qayta-qayta bosilgan, ko‘p o‘qilgan va bahs-munozaralarga sabab bo‘lgan. Bunga mazkur romanning dolzarb va qiziqarli g‘oyaviy-badiiy mazmunga ega ekanigina emas, balki Istiqlol davri o‘zbek

romanchiligiga xos uslubiy izlanishlarning yetakchi tamoyillarini o‘zida aks ettirganligi ham sabab bo‘ldi.

Mavzuga oid adabiyotlar sharhi

Qozoqboy Yo‘ldosh, Muhayyo Yo‘ldosh [2] kitoblarida badiiy tahlil turlari, tahlil turlarining o‘zaro aloqadorligini belgilay olishi; badiiy tahlil bosqichlari, badiiy tahlilning genetik, tipologik, funksional, falsafiy, psixologik, filologik yo‘nalishlari, ilmiy tahlil va o‘quv tahliliga xos tamoyillarni bilishi; badiiy tahlilda shakl va mazmun, badiiy matnni tekshirishdagi ilmiy maktablarni tavsiflay bilish; badiiy tahlilda adabiy turga xos xususiyatlarni hisobga olish, lirik, epik, dramatik asarlarni tahlil qilish yo‘llarini bilishi haqida fikr yuritiladi.

Q.Yo‘ldoshov[3] maqolasida modernizmni falsafada aristotelcha-gegelcha-kantcha klassik qarashlardan yuz o‘girib, uni inkor etish natijasi o‘laroq yuzaga kelgan ilmiy-estetik fikrlar tizimi sifatida ta’riflagan. … Shuningdek, olim modernistlar o‘zigacha mavjud bo‘lgan barcha adabiy tajribalarni inkor etib, tamomila yangicha yo‘nalish yaratishga uringanliklari, modernizmda borliq hodisalari hamda odamning muayyan maqsadga yo‘naltirilgan faoliyatigina emas, balki insondagi klassik san’atning e’tiboridan chetda qolib kelgan zerikish, siqilish, tushkunlik, qo‘rquv singari ruhiy tushuncha va holatlar ham badiiy tasvir obyekti maqomiga ko‘tarilganini o‘rinli qayd qilgan edi.

I.Yaqubov [3] monografiyasida mustaqillik davri o‘zbek romanlaridagi poetik yangilanishlar va ularning yuzaga kelishiga ta’sir etgan omillar joriy adabiy jarayon konteksti va jahon adabiyoti aspektida yaxlit nazariy qarash va tasavvurlar hosilasi sifatida oydinlashtirilgan, hayotiy-estetik asoslari ko‘rsatilgan.

Y. Solijonov [9] adabiy tanqidiy maqolalar, suhbatlar kitobi badiiy adabiyotga qiziquvchi keng kitobxonlar ommasiga mo‘ljallab yozilgan bo‘lib, esse hamda suhbatlarida XXI asrning dastlabki o‘n yilligida yaratilgan badiiy asarlarda real hayotning ko‘zgudagi rangin manzaralari, ayrim qora dog‘lari to‘g‘risida xolisona fikr yuritiladi.

Tadqiqot metodologiyasi

Tadqiqotning metodologik asosini O‘zbekiston Respublikasi Vazirlar Mahkamasining 2018-yil 16-fevraldagi 124-F-son “O‘zbek mumtoz va zamonaviy adabiyotini xalqaro miqyosda o‘rganish va targ‘ib qilishning dolzarb masalalari” mavzusidagi xalqaro konferensiyani o‘tkazish to‘g‘risida”gi farmoyishi hamda mazkur faoliyatga tegishli boshqa me’yoriy-huquqiy hujjatlarda belgilangan vazifalarni amalga oshirishga ushbu tadqiqot muayyan darajada xizmat qiladi. Shuningdek, tadqiqot jarayonida badiiy tahlil qilishda mantiqiy fikrlash, ilmiy mushohada, tizimli yondashuv metodlaridan foydalanilgan holda tadqiq etilgan.

Tahlil va natijalar

“Muvozanat”ning ko‘pchilik e’tiboriga sazovor bo‘lishini ta’minlagan badiiy-estetik tamoyillar nimalardan iborat edi? “Muvozanat” an’anaviy romanlardan qaysi jihatlari bilan farq qiladi?

“Muvozanat” romanining tasvir yo‘sinida A.Qodiriy, A.Cho‘lpon, M.Oybek, A.Qahhor, O.Yoqubov, P.Qodirov, Sh. Xolmirzayev, O‘.Hoshimov va Omon Muxtorlar ifoda tarziga yoki ularni yangilaganlik alomatlari nimalarda ko‘rinadi?,

degan bir qator muhim masalalar tevaragida hali o‘zbek adabiyotshunosligida mulohazalar to‘xtagani yo‘q.

Ayrim munaqqidlar bu roman kompozitsiyasini goh modernizmning u yoki bu o‘zaniga, goh strukturalizmning tushunarsiz g‘alviriga va goh yana o‘zga “izm”lar qolipiga solib tadqiq qilishga urindilar. Ayrim adabiyotshunoslar esa unda an’anaga ergashish va vorisiylik qat’iy ekanini qayd etishmoqda. Lekin roman hamon yashashda, o‘qilishda davom etmoqda, ko‘plab yangi o‘quvchilarini topmoqda. Yuqorida qo‘yilgan qator savollarga uzil-kesil va hammani qoniqtiradigan yo‘sinda javob berishning imkoni ham, ehtimolki, keragi ham yo‘qdir. Negaki, har qanday badiiy asar turli davrlardagi o‘quvchilarga turlicha ta’sir qiladi va ular tomonidan turfa xil yo‘sinda qabul etiladi va shunday bo‘lishi tabiiy hamdir. Chunki vorisiylik an’anasi bashariyat hayotining har bir bosqichida yashagan odamlarning tafakkuri va ruhiyat olamida o‘z nuqsini qoldiradi. Binobarin, insoniyatning badiiy-estetik didi ham tinimsiz o‘zgarib turadi.

Hamma zamonlarda adabiy ijodning jamiyat e’tirofiga loyiq mahsuli o‘ziga xos ijtimoiy hodisa o‘laroq ijodkorni yetishtirgan shart-sharoit, ma’naviy-ahloqiy muhit, uslubiy yo‘nalishidagi betakrorlik singari xususiyatlar takrorlanmas adabiy obida sifatida qoladi. Zero, ijodkorning voqelikdagi narsa-hodisalarga yondashuv tarzi, hayotdagi tartibsiz voqea-hodisalar orasidan o‘ziga kerakli, deb hisoblaganlarini tanlab olishi va badiiy tartibga solib tasvirlashi individuallikni, ba’zan, hatto, adabiy yangilovchilikni keltirib chiqaradi. Shunisi ham borki, har qanday yangilanish adabiy vorisiylik an’analari doirasidagina amalga oshadi.

Ana shu jihatdan olib qaralganida, “Muvozanat” roman-mushohada yo‘siniga mansub bo‘lganligi bois asar badiiy to‘qimasida ijtimoiy-falsafiy o‘ylar, psixologik kechinmalar ko‘lamining berilishi epik xronotop yoki qahramonlarora muloqot (dialog)dan ustunlik qiladi. Unda zamondoshlarimizning g‘oyat chigal va murakkab taqdir yo‘li XXI asrning tezkor taraqqiyot maromi prizmasi orqali chiziladi. Asarning kompozitsion markazida turgan Yusufning shirin bolalik xotiralari va so‘nggi o‘n besh-yigirma yillik iztiroblar shiddati og‘ushidagi hayoti, azoblar komidagi ruhiy kechinmalari Yusuf ota va ona, Yusuf-Muhammadjon aka, Yusuf-Amir, Yusuf-Oygul, Yusuf-Said, Yusuf-Mirazim, Yusuf-Zahro va boshqa shaxslararo munosabatlar o‘rami orqali ochila boradi. Ularning har biri o‘zgacha dunyo, o‘z dunyoqarashlari, his–tuyg‘ulari, oilaviy muammolari bilan rang-barang shaxsiyat egalari sifatida namoyon bo‘ladi. Yozuvchi ana shu xilma-xil badiiy siymolar qiyofasi, ularning munosabatlaridagi adoqsiz chigalliklar fonida odamning yashashdan maqsadi, uning Alloh va jamiyat oldidagi burchini ado etish yo‘lidagi yondashuvlari falsafiy-ruhiy to‘lg‘anishlar tasviri orqali ko‘rsatib berilgan.

Iste’dodli adib o‘z romanida boqimandalik yoki jamiyatdagi tub o‘zgarishlarni chetdan turib, loqayd kuzatuvchilik kayfiyatidan voz kechib, yashash uchun kurasha boshlagan, tafakkuri uyg‘ongan millat vakillarining betakror qiyofasini yarata olgan. Badiiy adabiyotdagi vorisiylik va turli davr hamda shaxslarning o‘ziga xosligini badiiy aks ettira bilishda ko‘rinadigan yangilovchilik xususiyatlari Ulug‘bek Hamdam asarida o‘zaro uyg‘unligi va ta’sirchanligi bilan namoyon bo‘ladi.

Yozuvchi “Muvozanat” va undan keyin yaratilgan barcha romanlarida o‘zbek romanchilik maktabida shakllantirilgan adabiy tajribalardan unumli foydalangan. Chunonchi, u Qodiriy va Cho‘lpondan obrazlarni milliy ruhiyat o‘ramida tasvirlash mahoratini o‘zlashtirgan bo‘lsa, Oybekdan timsollar xatti-harakatini ijtimoiy hayot bilan asoslashni, Abdulla Qahhordan personajlar tasviridagi aniqlikni, Odil Yoqubovdan qahramonlar ruhiy dunyosini shiddatli o‘ylar og‘ushida yorqinroq ko‘rsatishni o‘rgangan. Biroq Ulug‘bek Hamdam ustoz adiblarning an’analarini o‘zlashtirish bilangina kifoyalanib qolganida, asarlari kitobxonlar e’tiborini qozonmagan, boshqa ayrim asarlar qatori unutilgan bo‘lardi.

Ulug‘bek Hamdam adabiy an’analarga ijodiy munosabatda bo‘ldi. Ulardagi diqqatga loyiq qirralarni bugunning qarashlari, o‘zining badiiy-estetik meni, iste’dodining betakror yolqini bilan nurlantira oldi. Shu sababli “Muvozanat”ning qahramonlari o‘quvchilar ko‘nglidan joy oldi. Bu timsollarning intilishlari, o‘y-xayollari, orzu-istaklari kitobxonlarga ham yuqdi. Zero roman qahramonlari ustozlar tasvirlagan davr tuyg‘ularini emas, balki o‘z davrining hislarini tuyushardi. Ularning iztirobu intilishlari kitobiy emas, hayotiy edi.

Ma’lumki, har bir davr o‘z aqidalari, dunyoqarashi, estetik qadriyatlarini ilgari suradi. Mavjud ijtimoiy-psixologik vaziyat, nazariy asos badiiy tizimga ham ta’sir ko‘rsatadi. Tabiiyki, milliy ma‘naviyat jarayonini shakllantirishda ruhiy munosabatlarning ham shaxsiy, ham ijtimoiy mohiyatini badiiy tadqiq etish, an‘anaviy va zamonaviy badiiy tamoyillarning uzviy aloqadorligi tajribalarini umumlashtirish, publitsistik-falsafiy tasvir ko‘lamini kengaytirish, turli badiiy shakllarni uslubiy-mazmuniy izlanishlar bilan boyitish muhim ahamiyat kasb etadi. Modomiki, mohiyatni yangilab turishga yo‘naltirilgan adabiyot jamiyat belgilab bergan mezonlarga tayangan holda rivojlanar ekan, ongning tadrijiy takomili poetik tafakkur usul va vositalari, ifoda va tasvir imkoniyatlarini ham tabiiy ravishda o‘zgartirib yuboradi. Demak, o‘z san’atining spetsifik xususiyatlarini aniqlab olishda ichki – badiiy-psixologik omillar bilan bir qatorda, tashqi – ijtimoiy-falsafiy fikr taraqqiyotini ham hisobga olish lozim.

Ulug‘bek Hamdam zamonaviy o‘zbek adiblari orasida asarlari boshqa tillarga ko‘p tarjima qilinayotgan va xalqaro miqyosda ham e‘tirof etilayotgan oz sonli ijodkorlardan biridir. Uning “Isyon va itoat” romani, “Yolg‘izlik” qissasi, o‘nga yaqin hikoyasi va she‘rlari rus tiliga tarjima qilindi. Ijodkorning “Tosh” degan hikoyasi va bir qancha she‘rlari hatto ingliz tiliga o‘girildi. “Muvozanat” romani va “Tosh” hikoyasi Amerikada e‘tirof etildi. Ulug‘bek Hamdamning mahorati tufayli Mavlono Rumiyning “Ichindagi ichindadir” (2001) va professor U.Turonning “Turkiy xalqlar mafkurasi tarixi” nomli asarlari turk tilidan o‘zbek tiliga tarjima qilindi. Ulug‘bek Hamdam asarlari bugungi kunda allaqachon o‘z o‘quvchilarini topgan. Uning asarlari o‘quvchini tanlaydigan asarlardir. Chunki uning ijodidan bahramand bo‘lmoqchi bo‘lgan o‘quvchi ma‘lum intellektual tayyorgarlikka ega bo‘lishi kerak.

Ulug‘bek Hamdamning adabiy an’analar doirasida qolib ketmaganligi yozuvchining “Muvozanat”dan keyingi asarlarida ham yaqqol ko‘zga tashlandi. Chunonchi, u o‘zbek adabiyotiga birinchi bo‘lib ko‘proq falsafiy o‘ylar og‘ushida

yashaydigan adabiy qahramonlarni olib kirdi. Uning “Sabo va Samandar”, “Isyon va itoat”, “Yo‘l”, “Na’matak” singari romanlaridagi qahramonlarga yondashuv tarzi, ularning yelkasiga ortilgan badiiy yuk ko‘lami oldingi adabiy tajribalarda ko‘rinmagan edi.

Adib o‘z qahramonlarini ko‘proq o‘y-xayollar quchog‘ida ko‘rsatishga intiladi. Yozuvchi “Na’matak” romanida nafaqat badiiy tasvir yo‘sini, balki adabiy shaklni tanlash va unga rioya qilish borasida ham mavjud an’analarni yangilashga qodir ijodkor ekanligini ko‘rsatadi. Adibning ushbu mini romanining hajmi yarim bosma toboqdan ham kichikroqdir. Muhimi shundaki, yozuvchi o‘ta kichik hajm doirasidagi asariga muallif rostmana bir romanga yuk bo‘ladigan epik konseptni joylay bilgan.

Ma’lumki, bugungi kun adabiy jarayonida hikoya janrining ham faolligi, sermahsulligi, serqirraligi, rang-barangligi adabiyotshunoslik fani oldiga muhim vazifalarni qo‘ymoqda. So‘nggi paytlarda adabiy tanqidda hikoyachilikda yuz berayotgan yangiliklar, ijobiy o‘zgarishlar, yutuq va nuqsonlarni tez anglab, tahlil etishga astoydil kirishildi. Janrga xos turli muammolar bag‘ishlangan alohida yirik tadqiqotlardan tashqari birgina hikoyani chuqur tahlil etish orqali janrning yangi imkoniyatlari va asosiy xususiyatlarini ochib beruvchi o‘nlab maxsus maqolalar ham paydo bo‘ldiki, bu adabiyotshunoslik va adabiy tanqidning munosib yutug‘idir. Ayni damda bunday tadqiqotlarning ko‘pi Ulug‘bek Hamdam atrofida kechayotganligi ham bejiz emas.

Xulosa va takliflar

Umuman olganda shuni aytish mumkinki, yozuvchi Ulug‘bek Hamdam ijodida mavzular ko‘lami u qadar keng bo‘lmasa-da, yangi, dolzarb muammolarning ko‘tarib chiqilishi va chuqur falsafiy mushohada asosida talqin etilishi bilan alohida ahamiyat kasb etadi. Ulug‘bek Hamdam o‘zbek romannavislik va hikoyanavisligi an‘analarini davom ettirgani holda, shakl masalasining kengligi, obrazlar tanlovi, modernistik talqinlarga murojaat jihatidan yangilanishlar yaratdi. Ayniqsa, yozuvchining tush-hikoyalari bayon uslubi, kutilmagan yechim bilan yakun topishi, katarsis hodisasining millat va yosh jihatidan qat‘iy nazar chuqur anglanishi kabilar bilan novatorlik kasb etadi. Mazkur hikoyalarda mifologik, diniy, falsafiy qarashlar uyg‘unlashib ketgan. Xullas, Ulug‘bek Hamdamning eng mashhur asarlari qatorida O‘zbekistonda ham, xorijda ham e’tirof etilgan she’riy, roman va pyesalari bor. Uning asarlarida davr ruhi aks ettiriladi va insoniy munosabatlar chuqur tahlilga tortiladi.

Foydalanilgan adabiyotlar ro‘yxati

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MASOFADAN ZONDLASH METODLARI ORQALI HAVO SIFATINI MONITORING QILISH (TOSHKENT SHAHRI ATROFI)

Annotatsiya:*Ushbu maqola masofaviy zondlash ma'lumotlari asosida Toshkent shahrining havo sifati monitoringini o'rganishga bag'ishlangan. Maqolada Yevropa Kosmik Agentligi (ESA) tomonidan ishlab chiqarilgan Sentinel-5P sun'iy yo'ldoshidan foydalanib Toshkent shahri va uning atrofida NO_2 (Azod dioksidi) tarqalishi va havo sifatini o'zgarishi o'rganib chiqildi va kutilgan natijalar olindi.*

Kalit so'zlar: *masofadan zondlash, havo sifati monitoringi, NO_2 tarqalishi, Sentinel-5P*

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MONITORING OF AIR QUALITY THROUGH REMOTE SENSING METHODS

Abstract:*This article is devoted to the study of air quality monitoring in Tashkent based on remote sensing data.The article examines the distribution of NO_2 (nitrogen dioxide) and changes in air quality in and around Tashkent using the*

Sentinel-5P satellite developed by the European Space Agency (ESA) and the expected results.

Key words: *remote zoning, air quality monitoring, NO_2 (nitrogen dioxide), Sentinel-5P*

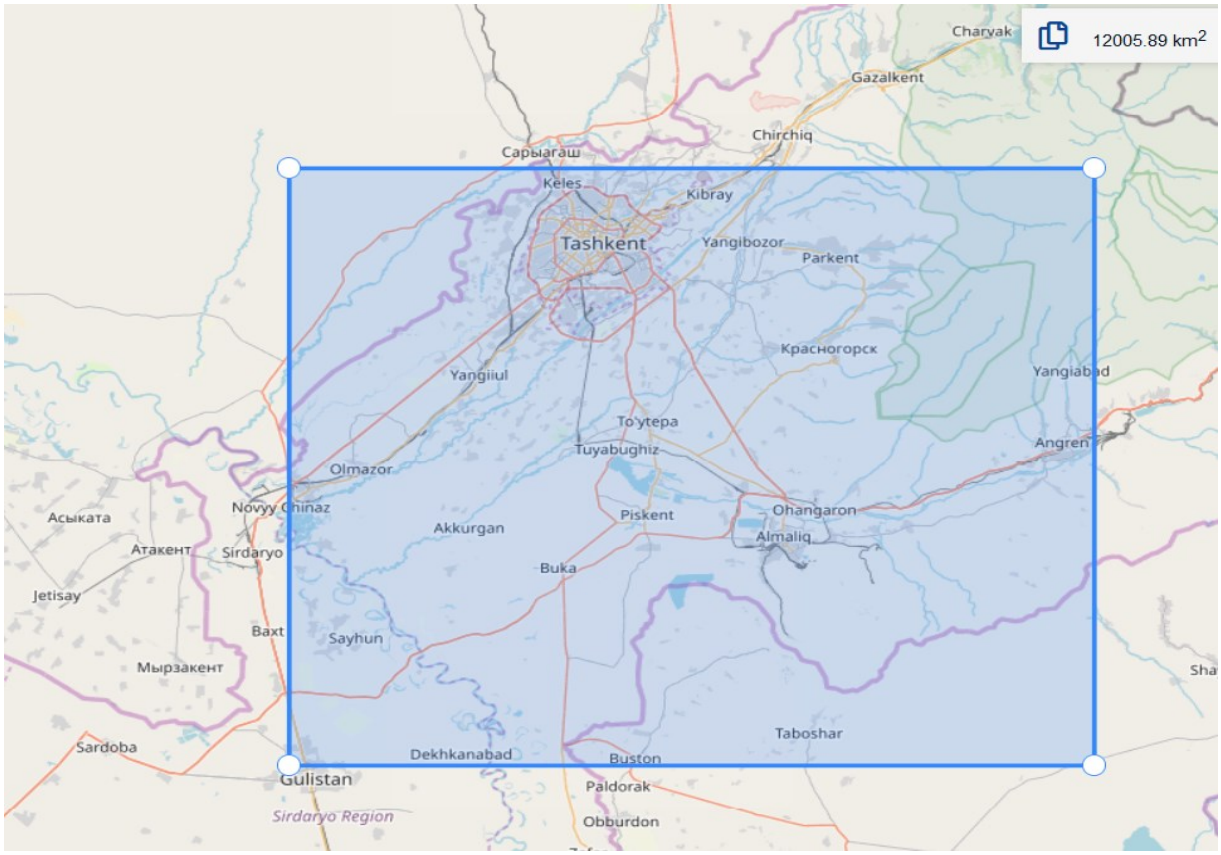
Kirish

Hozirgi kunda havo ifloslanishi dolzarb muammoga aylanib bormoqda. Havo ifloslanishi global muammolardan biri bo‘lib, masofadan zondlash ma’lumotlari orqali uni monitoring qilish samarali bo‘lmoqda. Bugungi kunda global ekologik barqarorlikni ta’minlashda atmosfera havosi sifatini nazorat qilish, ayniqsa, shaharlarda ifloslanish darajasini monitoring qilish eng zaruriy vazifalardan biri hisoblanadi. Shu jihatdan, masofadan zondlash usullari, xususan, sun’iy yo‘ldoshlar yordamida havodagi gaz tarkibiy qismlarini aniqlash zamonaviy ekologik tadqiqotlarning zaruriy yo‘nalishiga aylangan. Sentinel-5 P (TROPOMI) sun’iy yo‘ldoshi tomonidan taqdim etilgan kosmik monitoring ma’lumotlari orqali havo ifloslanishining aniqligi yuqori, hududiy aniqlash imkoniyati esa keng ko‘lamda amalga oshirilmoqda.

Ushbu maqolada 2023 va 2024 yillar noyabr oylari davomida Toshkent shahri atmosferasidagi NO_2 gazining konsentratsiyasi bo‘yicha olingan zondlash ma’lumotlari asosida tahlil o‘tkazildi. Ushbu tahlil orqali shaharda havoning ifloslanish holatidagi o‘zgarishlar, ularning jadalligi, maydon bo‘yicha taqsimlanishi o‘rganildi. Tadqiqotning asosiy maqsadi - vaziyatni ilmiy jihatdan baholab, ekologik xavfsizlikni oshirishga qaratilgan.

Asosiy bo‘lim

Ushbu ilmiy maqolada o‘rganish obyekti sifatida O‘zbekiston Respublikasi poytaxti Toshkent shahri tanlangan. Toshkent shahri, O‘zbekiston Respublikasining poytaxti, Markaziy Osiyo mintaqasining muhim geografik va iqtisodiy markazi hisoblanadi. U O‘zbekistonning shimoliy-qo‘shni hududida joylashgan bo‘lib, 41.3111° shimoliy kenglik va 69.2407° sharqiy uzunlik koordinatalariga ega. Toshkent shahrining joylashuvi, uni mamlakatning boshqa yirik shaharlari, masalan, Samarqand, Buxoro, Farg‘ona vodiysi va Qozog‘iston bilan aloqalarini kuchaytirgan.Shahar mamlakatning eng yirik sanoat, transport va ijtimoiy markazi bo‘lib, aholi zichligi hamda urbanizatsiya darajasining yuqoriligi bilan ajralib turadi. Bu omillar shaharning ekologik holatiga, xususan, atmosfera havosining ifloslanish darajasiga bevosita ta’sir ko‘rsatadi. Obyekt havosining ifloslanishi muhim muammolardan biri bo‘lib, so‘nggi yillarda bu sezilarli darajada yomonlashib bormoqda. Bu esa aholi salomatligiga ta’sir ko‘rsatib, nafas olish yo‘llari kasalligi, yurak-qon tomir kasalliklarini keltirib chiqarishi, shuningdek, o‘simlik va hayvonot dunyosiga salbiy ta’sir ko‘rsatishi mumkin. Toshkent shahrida havo sifatini Sentinel-5P sun’iy yo‘ldoshi yordamida monitoring qilish masofaviy va aniqlik jihatidan qulay hisoblanadi. Ushbu sun’iy yo‘ldosh orqali yuqori aniqlikdagi NO_2 xaritalarini yaratish imkonini beradi, bu esa havoning ifloslanish darajasini hududiy tahlil qilish va ekologik vaziyatni baholashda keng imkoniyatlar yaratadi.



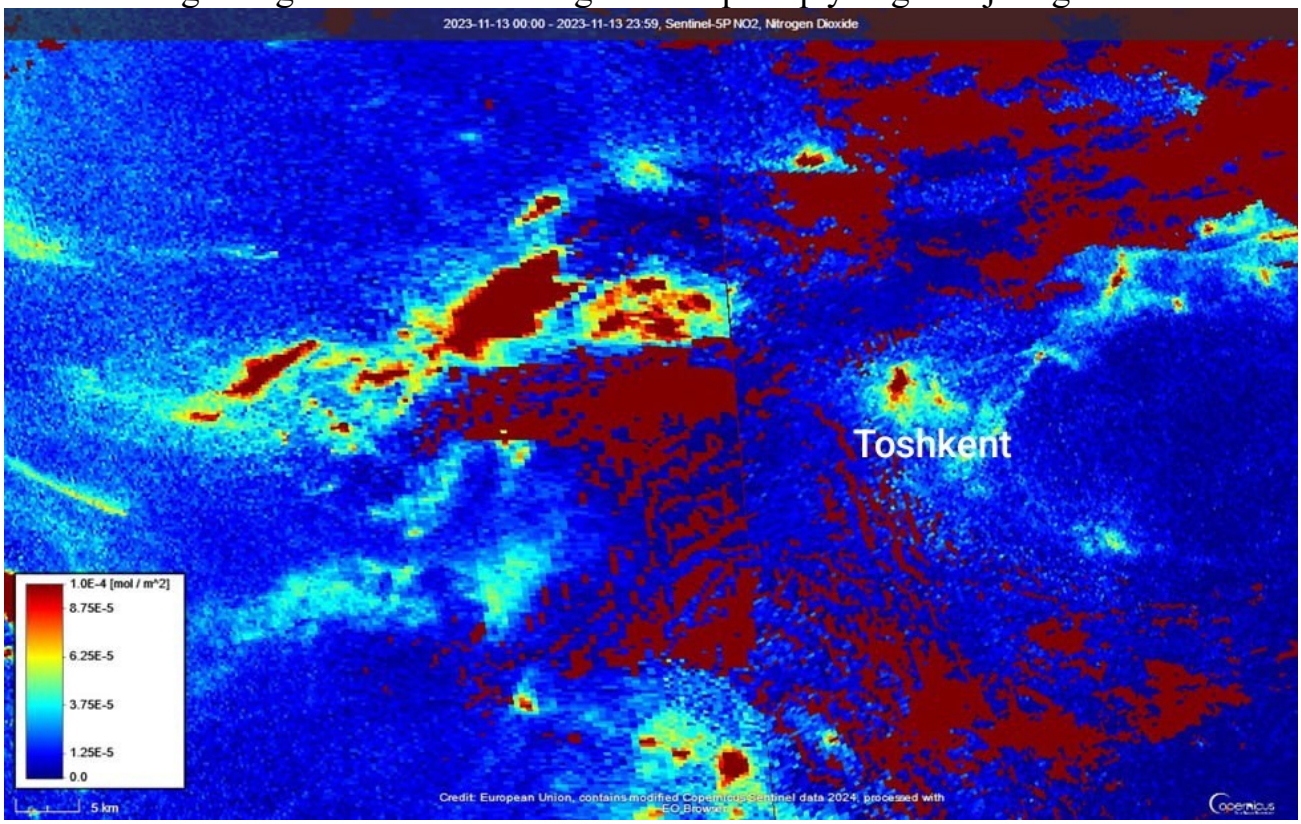
1-rasm. Tadqiqot obyekti hududi.

Metodologiya

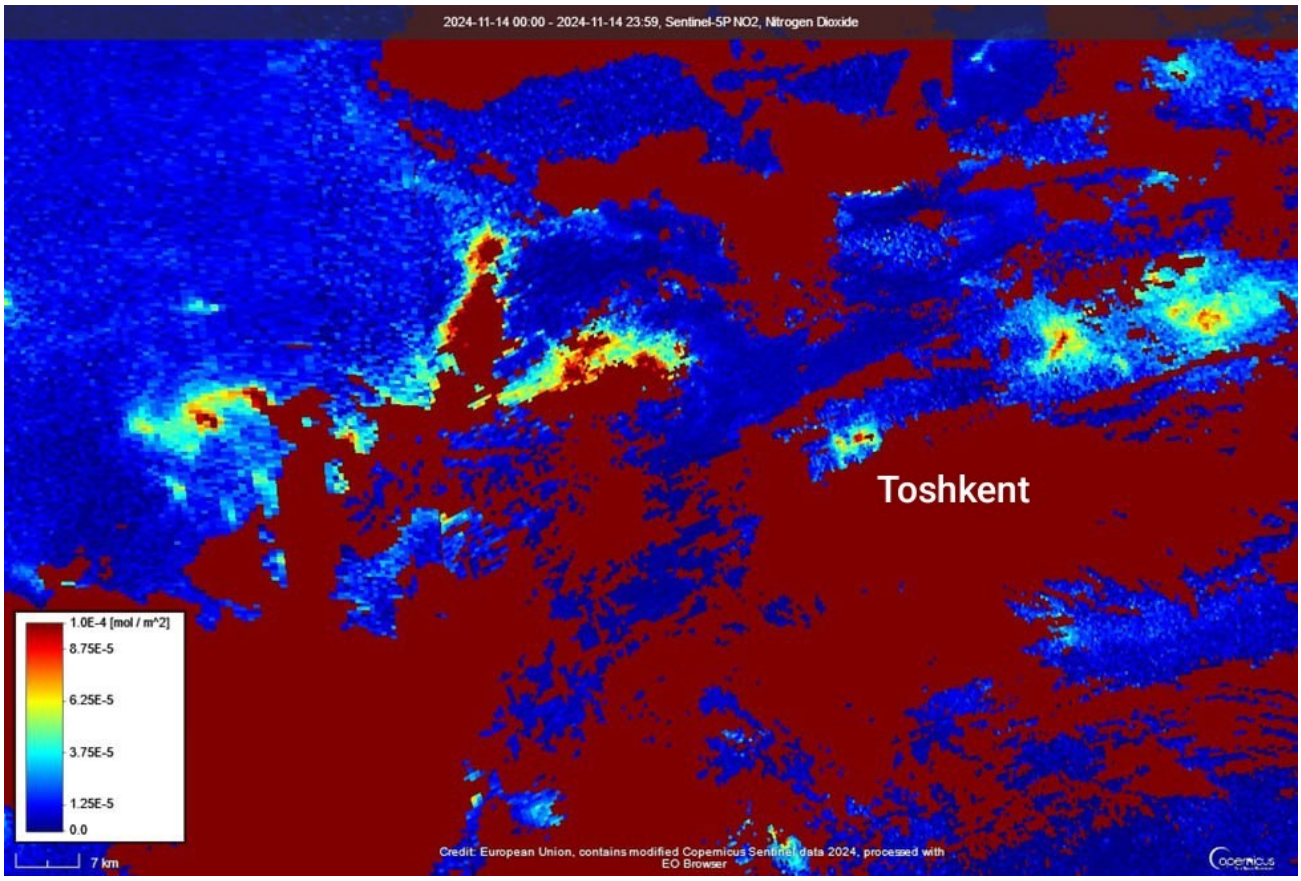
Sentinel-5P - bu Yevropa Kosmik Agentligi (ESA) tomonidan ishlab chiqarilgan sun'iy yo'ldosh bo'lib, havo sifati va atrof-muhit monitoringi uchun mo'ljallangan. U Sentinel seriyasining bir qismi hisoblanadi va asosan atmosferadagi gazlarni, ifloslanish darajasini va iqlim o'zgarishini kuzatish uchun qo'llaniladi. Sentinel-5P o'zining TROPOMI (Tropospheric Monitoring Instrument) asbobi yordamida yer yuzi atmosferasidagi zararli gazlarni, jumladan, azot oksidi (NO_2), ozon (O_3), oltingugurt dioksidi (SO_2), karbonat angidrid (CO_2) va metan (CH_4) gazlarini aniqlaydi va o'lchaydi. Sentinel-5P sun'iy yo'ldoshining aniqligi 7x7 km gacha bo'lganligi bizga anchagina qulaylik yaratadi va shu bilan birga zararli elementlarni aniqlashda yuqori aniqlikni ta'minlaydi. TROPOMI asbobining yuqori o'lchash rezolyutsiyasi bilan ajralib turadi, u bir soat ichida Yer yuzining katta qismini qamrab olish imkoniyatiga ega va har kuni 2600 km kenglikdagi hududni o'z ichiga oladi, bu esa butun dunyo bo'ylab havo sifatini kuzatish imkonini beradi. Sentinel-5P dan olingan ma'lumotlarni tahlil qilishdan maqsad - inson salomatligini himoya qilish, iqlim o'zgarishining oldini olish va atrof-muhitni yaxshilash uchun samarali monitoring tizimlarini yaratishdir. Ushbu sun'iy yo'ldosh global ifloslanish manbalarini aniqlash va ularga qarshi choralarni amalga oshirishda muhim vosita bo'lib xizmat qiladi. Biz bu suniy yo'ldoshdan malumotlaridan foydalangan holda shahar da NO_2 gazining tarqalishini o'rganib chiqdik.

Natijalar va tahlil

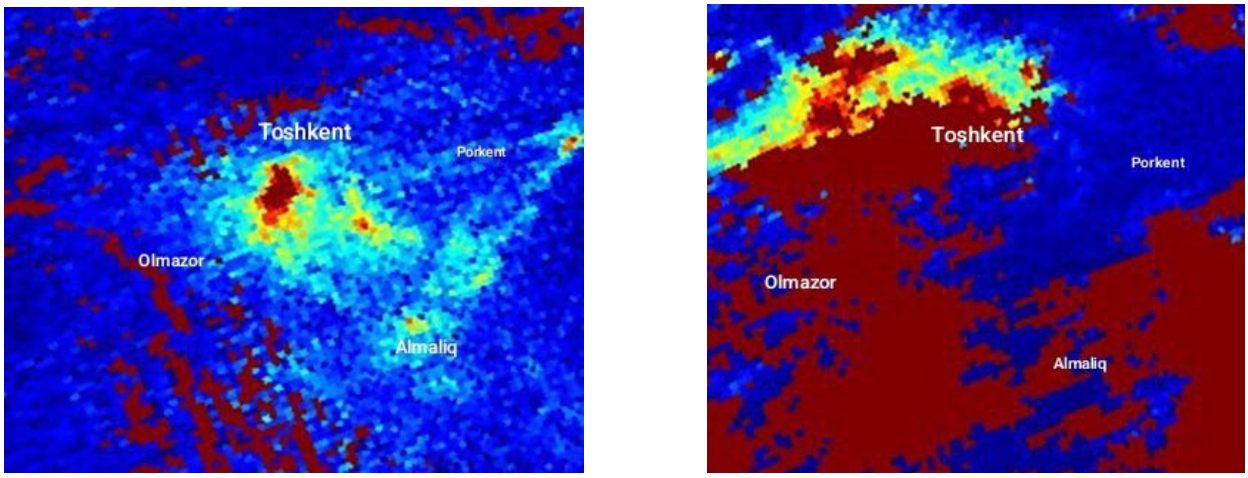
Masofadan zondlash orqali ma’lumotlarni tahlil qilishning bizda bir qancha usullari mavjud. Biz olingan ma’lumotlarni indekslar, ya’ni havoning ifloslanishini aniqlovchi AQI (Air Quality Index) yordamida GIS dasturlari orqali raqamli ko‘rinishda ishlab chiqishimiz va raqamli ma’lumotlarga ega bo‘lishimiz mumkin. Yana bir usul olingan ma’lumotlarni taqqoslash, ya’ni vizual tarzda havo ifloslanish darajasi yuqori yoki pastligini o‘rganib chiqishimiz mumkin va ushbu ilmiy maqolada aynan shu usuldan foydalanildi. Dastlab https://scihub.copernicus.eu saytidan Sentinel-5P sun’iy yo‘ldoshi orqali yillar kesimida ma’lumotlar yuklab olindi. So‘ng uning ko‘rsatkichlari o‘rganib chiqilib quyidagi natijalarga erishildi.



2-rasm. Sentinel-5P sun’iy yo‘ldoshidan 2023-yil noyabr oyida olingan NO_2 ko‘rsatkichi



3-rasm Sentinel-5P sun’iy yo‘ldoshidan 2024-yil Noyabr oyida olingan NO_2 ko‘rsatkichi



4-rasm. Toshkent shahrining 2023-yil va 2024-yillardagi o‘zgarishlarining vizual ko‘rinishi

Ranglar shkalasi	NO_2 (mol/m^2)	Ifodalaydigan qiymati (tushuntirish)
Qizil	1.OE-4	Juda yuqori ifloslanish
To’q sariq	8.75E-5	Yuqori bo’lgan ifloslanish
Sariq	6.25E-5	O’rtacha ifloslanish
Yashil	3.75E-5	Past ifloslanish
Ko’k	1.25E-5	Juda past ifloslanish
To’q ko’k	0.0	Havosi ifloslanmagan hududlar

Yuqoridagi rasmlar hamda ma’lumotlarga tayangan holda 2024-yil noyabr oyida olingan ma’lumotlar 2023-yil noyabr oyidagi ma’lumotlarga qaraganda havo ifloslanishi ancha yuqori ekanligini ko‘rsatadi.Ya’ni bu inson salomatligi uchun xavfli hisoblanadi.Tadqiqotlar natijalariga ko‘ra, 2024-yil noyabr oyida Toshkent shahri atmosferasidagi NO_2 (azot dioksidi) konsentratsiyasida 2023-yil noyabr oyiga qaraganda sezilarli darajada ko‘payishi kuzatilgan. Vizual tahlil yordamida 2-rasm (2023-yil) va 3-rasm (2024-yil) orasida yaqqol farq borligi aniqlandi. Rasmlar tahlilini quyidagicha ko‘rsangiz bo‘ladi:

2023-yil noyabr oyidagi rasmda (2-rasm), Toshkent shahrining asosiy qismi yashil va sariq ranglarda bo‘lib, bu maydonlarning ifloslanish darajasi past va o‘rtacha ekanligini ko‘rsatadi. Maydonning 55-60% qismi yashil va sarg‘ish ranglarda bo‘lib, bu havoda NO_2 konsentratsiyasi 3.75E-5 - 6.25E-5 mol/m2 oralig‘ida ekanligini anglatadi. Shaharning o‘rta va shaharchalar atrofi hududlari ko‘k rangda bo‘lib, juda past ifloslanish qayd etilgan, bu esa 30% maydonni qamrab oladi.

2024-yil noyabr oyidagi rasmda esa (3-rasm) shaharning ko‘p qismi sariq, to‘q sariq va qizil ranglarda bo‘lib, bu NO_2 ifloslanishining o‘rtachadan juda yuqoriga o‘tganligini ko‘rsatadi. Shaharning 50% dan ortiq qismi qizil va to‘q sariq bo‘lib, bu hududlarda NO_2 konsentratsiyasi 8.75E-5 - 1.0E-4 mol/m2 orasida bo‘lgan. Bu hududning 35% qismi sariq rangda, ya’ni o‘rtacha ifloslanish darajasida. Shaharning barmoq bosadigan qismi faqat (15% ga yaqin) yashil yoki ko‘k rangda, ya’ni past yoki juda past ifloslanish qayd etilgan. Bu o‘zgarish ekologik vaziyatning muammoli masalaga aylanganligini ko‘rsatadi. 2024-yilda qayd etilgan NO_2 konsentratsiyasi, xususan sanoat markazlari, avtomobil transporti ko‘p bo‘lgan yo‘llar, va urbanizatsiyalashgan shahar markazida oshgan. Bu esa bir qancha muammolarni yuzaga keltirib chiqaradi.

Xulosa

Xulosa qilib aytadigan bo‘lsak, tahlil qilingan Sentinel-5P sun’iy yo‘ldoshi ma’lumotlari asosida 2024 yilda atmosferada NO_2 (azot dioksidi) konsentratsiyasi o‘tgan yilga nisbatan oshgan.Vizual tahlil shuni ko‘rsatadiki, shahar markazlari,

avtomobil yo‘llari va sanoat hududlarida ifloslanish darajasi yuqori bo‘lgan. Umuman aytadigan bo‘lsak, natijalar Toshkent shahrida havo sifatini muntazam ravishda monitoring qilib borish zarurligini yana bir bor ko‘rsatadi. Va uni kuzatib borishda Masofadan zondlash usullaridan foydalanish eng samarali usullardan biri hisoblanadi.

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THE IMPORTANCE OF IMPROVING HOUSEHOLD ECONOMIC ACTIVITY IN REDUCING POVERTY IN UZBEKISTAN

Abstract. *This article analyzes the issues of poverty reduction in Uzbekistan by improving the economic activities of households. It considers ways to improve the socio-economic situation of households by diversifying their income sources, developing small entrepreneurship and family businesses, and widely involving women and youth in economic processes. It also analyzes the effectiveness of financial and institutional support mechanisms provided by the state. The results of the study show the importance of effectively using the potential of households in the fight against poverty.*

Keywords: *households, economic activity, poverty, family business, income diversification, employment, social support.*

Introduction. Increasing the economic activity of households as subjects of the national economy and their effective functioning is not a simple matter in itself, but a complex process. This is explained, first of all, by the dual nature of this economic phenomenon. In this case, a person representing a household - as a social and economic individual - appears on the stage in the production, consumption, distribution functions performed by them, or in a certain combination of them. Increasing the economic activity of households and their effective functioning is, on the one hand, an economic process, and on the other hand, a social process.

Analysis and results. Analysis of the structure of the household budget and the factors influencing it allows us to clarify a number of problems in the development of households in our country today. The constant increase in prices for certain goods and services cannot but have a significant negative impact on the household budget. The increase in payments for housing and communal services, the increase in the cost of socially important services have a significant restrictive effect on the household budget. Today, when we talk about the development of households, the investment activity of households is not noticeable at all. This, in turn, indicates the insufficient development of the investment infrastructure in our country**.** Another serious problem in the development of households is the lack of attention paid by household members to their own health and their failure to adhere to a healthy lifestyle, since a person is an important economic resource of any society. Globalization processes, due to the openness of country borders, the free movement of household members within territories, the possibility of living in several places at the same time, the emergence of mixed marriages between representatives of different nationalities and ethnic groups with different beliefs and views, are creating serious problems in the internal and external regulation of households. In this regard, it requires the use of interstate regulatory instruments to regulate certain aspects and

processes of household activities. In particular, the legal acquisition of real estate abroad and the implementation of financial transactions by households in foreign countries require the use of interstate regulatory mechanisms. To this end, it is necessary to develop mechanisms for the development and implementation of international and interstate regulatory and legal documents to enable households to legally purchase real estate abroad and carry out financial transactions.

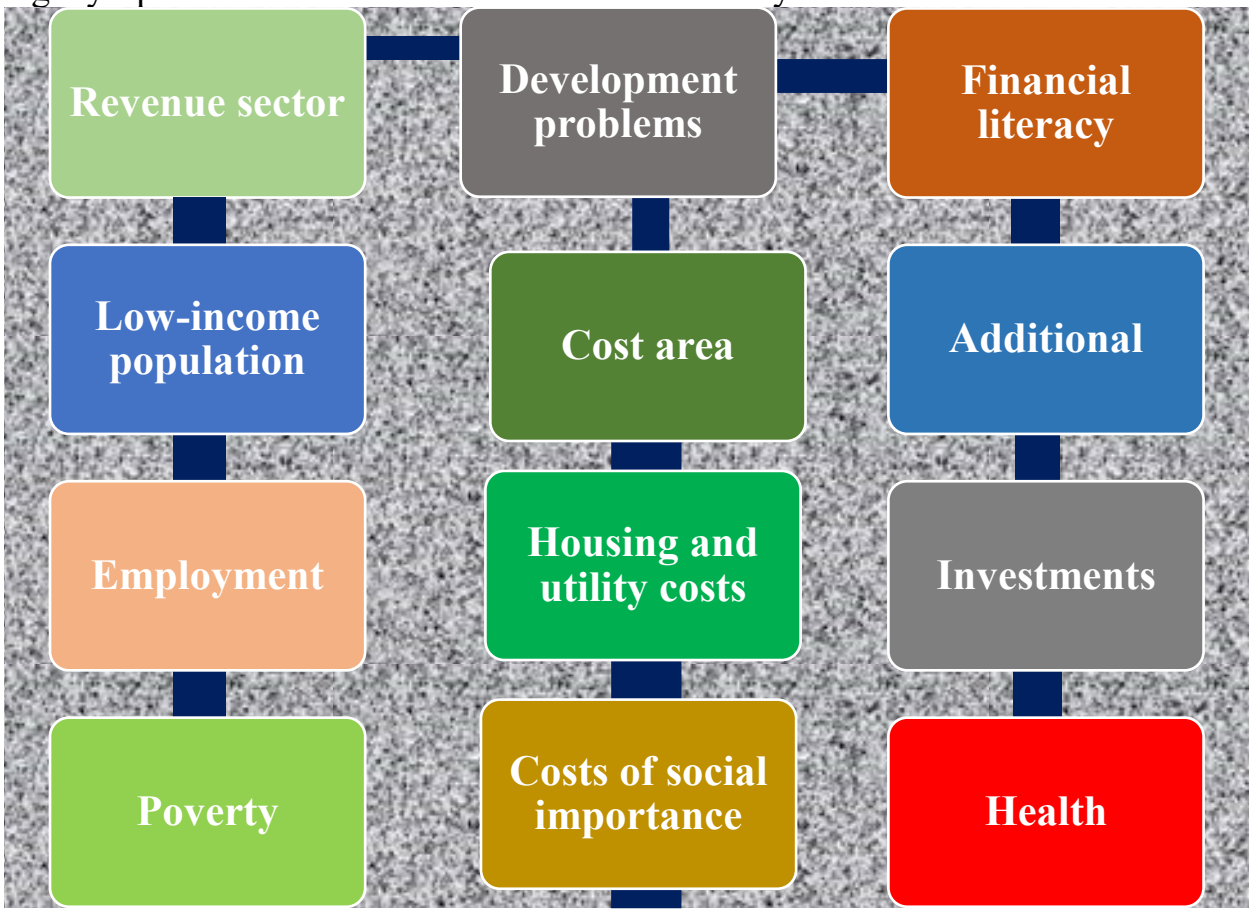

Figure 1. Problems of household development in the country

The group of employees engaged in domestic work is distinguished by the type of employment. Domestic work includes employees in various forms of labor activity: running personal subsidiary farms of urban residents; running peasant (homestead) farms producing agricultural products in order to earn additional income and meet the internal needs of the farm; organizing farm activities; engaging in individual labor activities that do not have an agricultural character to meet the internal needs of the household; engaging in production-entrepreneurial activities and individual labor activities that do not have an agricultural character in small communities in order to sell the products produced and receive additional income (construction of farmsteads, farm buildings, etc.); providing individual paid services to the population in small business enterprises and small communities (various repairs, repair and construction work, educational and medical services);

organization and management of small business enterprises (kitchens, restaurants, laundry and dry cleaning of clothes, etc.); individual small retail trade; types of housework and self-service that are traditionally performed within households, although they can be provided on a paid basis by other specialized enterprises and organizations. “According to the results of the study, more than 80% of those employed in domestic work are engaged exclusively in domestic work. Most of them are self-employed, mainly sales employees, managers, and qualified specialists.”

Conclusion. One of the important indicators of increasing the economic activity of households is their level of property security. The greater the volume and quantity of property objects (material and financial) in households, the higher their level of economic activity. Their property objects include: land, means of production, money and securities, human capital, personal, family, private labor, hired private property, information, etc. Entrepreneurial and business households try to get the most out of these resources. In order to ensure their vital needs and expanded reproduction of human capital and to receive a high level of income, they use resources as an object of exchange between other economic entities. Households can earn income by renting out their land and means of production, investing money in bank deposits and exchanging income, information and data in the form of interest.

The scale of transaction costs in households is characterized by a high level of uncertainty. It is a unique, perfect process, the organizers of which are not known in advance. Since households have different priorities for the same resources, there is no generally established mechanism for distributing common transaction costs. As long as there is a system of interactions between households regarding the use of limited resources, the problem of property segregation and also the restriction of property rights will always remain. Today, within the competence of households, enterprises and state institutions, ensuring transparency of the processes of transferring property rights to other entities, property objects and subjects is an urgent task. This type of cost mainly occurs in two forms. First, while most of these costs arise from the need to directly protect property rights, a significant portion of the second type of costs is directly related to improving the literacy of household members.

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JAMOAT BINOLARINING YUMSHOQ TOM QOPLAMALARINI TA’MIRLASH TEXNOLOGIYASINI TAKOMILLASHTIRISH

Annotatsiya: *Ushbu maqolada O‘zbekistonning iqlimiy sharoitlari va jamoat binolari konstruksiyalarining xususiyatlarini hisobga olgan holda yumshoq tom qoplamalarining texnik holatini baholash masalalari o‘rganiladi. Jumladan, mavjud yumshoq tom materiallarining afzalliklari va kamchiliklari, ularning eskirishi, suv o‘tkazuvchanligi, mexanik bardoshliligi va issiqlik izolyatsiyasi xususiyatlari tahlil qilinadi. Amaliyotda uchrayotgan asosiy muammolar — sifatsiz ta’mirlash, noto‘g‘ri material tanlovi, qurilish texnologiyalariga to‘liq amal qilinmasligi va profilaktik texnik xizmat ko‘rsatish yetishmasligi chuqur ko‘rib chiqiladi.*

Kalit so‘zlar: *yumshoq tom qoplamasi, jamoat binolari, tomni ta’mirlash texnologiyasi, bitumli materiallar, elastik membrana, issiqlik izolyatsiyasi, ventilyatsiyali qatlam, suv o‘tkazmaslik, qurilish texnologiyasi, diagnostika usullari, energiya samaradorligi.*

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IMPROVING THE TECHNOLOGY OF REPAIRING SOFT ROOFING OF PUBLIC BUILDINGS

Abstract: *This article will address the issues of assessing the technical condition of soft roofing, taking into account the climatic conditions of Uzbekistan and the structural features of public buildings. In particular, the advantages and disadvantages of existing soft roofing materials, their wear resistance, water permeability, mechanical strength and thermal insulation properties will be analyzed. The main problems encountered in practice are thoroughly considered — poor-quality repairs, incorrect choice of materials, incomplete compliance with construction technologies and lack of preventive maintenance.*

Keywords: *soft roofing, public buildings, roof repair technology, bitumen materials, elastic membrane, thermal insulation, ventilation layer, waterproofing, construction technology, diagnostic methods, energy efficiency.*

Hozirgi vaqtda O‘zbekistonda mavjud jamoat binolari — maktablar, shifoxonalar, sport inshootlari, ma’muriy binolar va boshqa ijtimoiy obyektlar — aholiga doimiy xizmat ko‘rsatadigan muhim infratuzilma tarkibiy qismlarini tashkil etadi. Ushbu binolarning ekspluatatsion holati, ayniqsa tom konstruksiyalarining ishonchliligi va barqarorligi, ularning funksional samaradorligini bevosita belgilab beradi.

O‘zbekistonning kontinental iqlimi — yuqori harorat farqlari, kuchli quyosh nurlanishi, bahor va kuz oylaridagi kuchli shamollar, yog‘ingarchilik miqdorining mavsumiy o‘zgaruvchanligi — tom qoplamalariga katta mexanik va fizik-kimyoviy yuklama yuklaydi. Ayniqsa, so‘nggi yillarda keng tarqalgan yumshoq tom qoplamalari (asosan bitum asosidagi materiallar) ushbu omillar ta’sirida tez eskirishi, yorilishi va suv o‘tkazuvchan bo‘lib qolishi holatlari ko‘p uchramoqda.

Ko‘plab amaliy kuzatuvlar shuni ko‘rsatadiki, mavjud yumshoq tomlar aksariyat hollarda 10–15 yilgacha xizmat qilishi lozim bo‘lsa-da, noto‘g‘ri o‘rnatish, past sifatli materiallardan foydalanish, qurilish-montaj me’yorlariga amal qilinmasligi va muntazam texnik xizmat ko‘rsatish tizimining yetishmasligi sababli ularning yaroqlilik muddati ancha qisqarib ketmoqda. Buning natijasida tomda suv o‘tkazish, issiqlik yo‘qotilishi, binoning ichki mikroiqlimi buzilishi, energiya sarfi oshishi va binoning umumiy ekspluatatsion samaradorligi pasayish holatlari yuzaga keladi.

Ushbu holatlarni inobatga olgan holda, maqolada jamoat binolarida qo‘llaniladigan yumshoq tom qoplamalari holatini kompleks baholash, mavjud texnologik yondashuvlarning tahlili, va ularni takomillashtirish bo‘yicha amaliy tavsiyalar beriladi. Shuningdek, ilg‘or qurilish materiallari, yangi avlod gidroizolyatsiya va ventilyatsion qatlamli tizimlar asosida ta’mirlash texnologiyalarini joriy etish orqali yumshoq tom qoplamalarining xizmat muddatini uzaytirish va ekspluatatsiya ishonchliligini oshirish imkoniyatlari ko‘rib chiqiladi.

Quyida ***Iqlimiy sharoitlarning umumiy tavsifi***ni ko‘rsatuvchi **1-jadval** keltirilgan.

1-jadval.

Iqlimiy sharoitlarning umumiy tavsifi

Iqlim omili	O‘ziga xosliklari
Yoz	Juda issiq va quruq. Iyul oyida harorat +40°C dan yuqori
Qish	Sovuq, ba’zi hududlarda −15°C gacha tushadi
Yog‘ingarchilik	Asosan qish va bahor oylarida, yillik me’yori 100–400 mm
Shamol	Bahor va kuzda kuchli shamollar, changli bo‘ronlar mumkin
Quyosh nurlanishi	Yiliga o‘rtacha 2800–3000 soatgacha quyosh nuri tushadi
Harorat farqi	Kun va tun o‘rtasida 15–25°C gacha farq bo‘lishi mumkin

Bu omillar yumshoq tom materiallarining fizik va kimyoviy xossalariga bevosita ta’sir ko‘rsatadi.

Iqlimning yumshoq tom qoplamalariga salbiy ta’sirlari quyidagicha tasniflanadi:

Yuqori harorat va UV nurlanish:

- **Bitumli materiallar** yuqori haroratda eriy boshlaydi, yumshaydi va o‘z shaklini yo‘qotadi.
- Quyosh nurlari ta’sirida materiallar yorilib, elastikligini yo‘qotadi.
- **UV (ultrabinafsha)** nurlanishi bitum va polimerlar tarkibini yemiradi, ularni mo‘rtlashtiradi.

Harorat farqlari:

- Kecha-kunduzdagi harorat tafovuti qoplamalarda **termik kengayish va siqilish**ga olib keladi.
- Bu hodisa tikuv joylarida yorilishlar, ko‘chishlar va suv o‘tkazuvchanlikka sabab bo‘ladi.

Yog‘ingarchilik va namlik:

- Suv qoplamalardagi yoriqlar orqali tom konstruktsiyasiga kirib boradi.
- Suvli muhitda mikroorganizmlar (zamburug‘, mog‘or) paydo bo‘lib, materialni yemiradi.
- Namlik o‘zlashtirilgan sirtlarda muzlash-cho‘zilish jarayoni kuchayadi (ayniqsa qishda), bu esa strukturani buzadi.

Shamol bosimi:

- Shamoli kuchli hududlarda yomon mahkamlangan qatlamlar ko‘tarilib ketadi yoki yirtiladi.
- Past sifatli yelimlar va noto‘g‘ri o‘rnatilgan qoplamalar shamolda mustahkam turmaydi.

O‘zbekistonda ko‘plab jamoat binolari 1980–1990-yillarda qurilgan va ularning tom qoplamalari kapital ta’mirlash talab qiladi. Biroq, amaliyotda quyidagi 2-jadvalda keltirilgan ekspluatatsiya kamchiliklar kuzatiladi

2-jadval.

Ekspluatatsiya muammolari

Kamchilik turi	Natijasi
Sifatsiz o‘rnatish	Tom yuzasi notekis, yelimlashda pufaklar hosil bo‘ladi
Arzon va eski materiallardan foydalanish	Qisqa xizmat muddati, UV va suvga chidamsiz
Nosoz drenaj tizimi	Suv to‘planadi, material tezroq yemiriladi
Muntazam texnik xizmat yo‘qligi	Yoriqlar, namlanish va chirish kech aniqlanadi

Tavsiyalar: Material tanlashda:

- **Polimer-bitumli membranalar** — UV nurlanishga va harorat farqlariga chidamli.
- **PVC yoki EPDM membranalar** — uzoq muddatli, elastik va suv o‘tkazmas.

Loyihalash bosqichida:

- Issiqlik izolyatsiyasi bilan birgalikda ventilyatsion qatlamlar yaratish.
- Kondensatsiya hosil bo‘lishining oldini oluvchi **diffuzion membranalar**dan foydalanish.

Ekspluatatsiya davomida:

- Har yili bahor va kuz fasllarida vizual ko‘rikdan o‘tkazish.
- Termografik usullar bilan yashirin nosozliklarni aniqlash.

Jamoat binolarining yumshoq tomlarini ta’mirlashda ilg‘or texnologiyalarni joriy etish orqali:

- Ta’mirlash sifati va chidamliligi oshadi;
- Energiya samaradorligi yaxshilanadi;
- Uzoq muddatli ekspluatatsiya ta’minlanadi;
- Texnik xizmat ko‘rsatish xarajatlari kamayadi.

Kelgusida maxsus dronlar yordamida monitoring, yopiq skaner tizimlari va aqlli materiallar asosida tom holatini onlayn nazorat qilish imkoniyatlari kengaytirilishi maqsadga muvofiqdir.

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FINTECH VA AN'ANAVIY BANKLAR O'RTASIDAGI FARQ

Anotatsiya: *Ushbu maqolada zamonaviy moliyaviy texnologiyalar (fintech) va an'anaviy banklar o'rtasidagi asosiy farqlar tahlil qilinadi. Fintech kompaniyalari tomonidan taklif etilayotgan raqamli, tezkor va innovatsion xizmatlar bilan an'anaviy banklarning xizmat ko'rsatish uslublari o'zaro solishtiriladi. Shuningdek, moliyaviy texnologiyalarning foydalanuvchilar uchun yaratayotgan qulayliklari, texnologik moslashuvchanligi va bozordagi o'rni yoritiladi. Maqola fintech sohasining moliyaviy tizimga ta'siri va bank xizmatlarining raqamlashtirilishiga sabab bo'lgan omillarni ko'rsatib beradi.*

Kalit so'zlar: *Fintech, an'anaviy banklar, moliyaviy texnologiyalar, raqamli xizmatlar, bank tizimi, innovatsiya, tezkor to'lovlar, texnologik rivojlanish.*

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DIFFERENCES BETWEEN FINTECH AND TRADITIONAL BANKS

Abstract:*This article analyzes the key differences between modern financial technologies (fintech) and traditional banks. It compares the digital, fast, and innovative services offered by fintech companies with the service methods used in the traditional banking sector. Additionally, the conveniences created by financial technologies for users, their technological adaptability, and market position are examined. The article also highlights the factors influencing the development of the fintech industry and the digitalization of banking services.*

Keywords*: Fintech, traditional banks, financial technologies, digital services, banking system, innovation, fast payments, technological development.*

Kirish:

So'nggi yillarda moliyaviy sektor keskin texnologik rivojlanishlar ta'sirida tubdan o'zgarishga uchramoqda. Moliyaviy texnologiyalar, ya'ni fintech, an'anaviy moliyaviy xizmatlarga muqobil bo'lgan innovatsion yondashuv sifatida shakllanib, jismoniy va yuridik shaxslarning moliyaviy faoliyatini bajarish uslublarini yangilab bermoqda. Fintech kompaniyalari sun'iy intellekt, blokcheyn, katta hajmdagi ma'lumotlar (big data), mobil ilovalar kabi ilg'or texnologiyalardan foydalanib, foydalanuvchiga qulay, tezkor va moslashuvchan xizmatlar ko'rsatishadi.

An'anaviy banklar esa uzoq yillardan beri moliyaviy tizimning asosiy tayanchlaridan biri bo'lib kelmoqda. Ular omonatlar, kreditlar, investitsiya

xizmatlari kabi keng ko‘lamli xizmatlarni taqdim etadi. Biroq, ularning faoliyati ko‘pincha murakkab ichki tuzilma, byurokratiya va eski texnologiyalarga bog‘liq bo‘lib qolmoqda. Bu esa tez o‘zgarayotgan raqamli muhitda mijoz ehtiyojlariga moslashishda ma’lum qiyinchiliklarni yuzaga keltiradi.

Fintech kompaniyalari esa, aksincha, moslashuvchanligi va raqamli innovatsiyalarga tayanganligi sababli, foydalanuvchi ehtiyojlariga tezda javob bera oladi va xizmat ko‘rsatishda samaradorlikni oshiradi. Ushbu qarama-qarshi yondashuvlar moliyaviy xizmatlar kelajagi haqida muhim savollarni keltirib chiqarmoqda: fintech an’anaviy banklarni to‘liq almashtiradimi yoki ular bir-birini to‘ldiradimi? Mazkur maqolada fintech va an’anaviy banklar o‘rtasidagi asosiy farqlar – ularning texnologik poydevori, xizmat ko‘rsatish uslubi, mijozlar bilan ishlash strategiyasi, huquqiy-regulyativ muhit va raqamli transformatsiyaga moslashish darajasi orqali chuqur tahlil qilinadi. Ushbu tahlil moliyaviy sohada ro‘y berayotgan o‘zgarishlarni tushunishga yordam beradi va bank tizimining kelajakdagi rivojlanish yo‘nalishlariga aniqlik kiritadi.

Adabiyotlar tahlili: Moliya sohasida kuzatilayotgan raqamli transformatsiya jarayonlari zamonaviy bank tizimini tubdan o‘zgartirmoqda. Ayniqsa, so‘nggi yillarda moliyaviy texnologiyalar, ya’ni **fintech** sohasi mislsiz darajada rivojlanib, an’anaviy bank institutlari bilan taqqosda yangicha yondashuvlarni taklif etmoqda. Mazkur mavzu bo‘yicha tahlil etilgan adabiyotlar ushbu ikki tizim o‘rtasidagi asosiy farqlarni aniqlashtirish, ularning har biri taklif etayotgan xizmatlar, texnologik imkoniyatlar, operatsion tezlik, foydalanuvchilar bilan o‘zaro aloqa shakli va xavfsizlik tizimlari nuqtai nazaridan chuqur o‘rganishga imkon yaratadi.

N. K. Mishra (2020) tomonidan yozilgan “Fintech vs Traditional Banking: A Comparative Study” nomli maqolada fintech kompaniyalari mijozlarga yo‘naltirilgan, moslashuvchan va arzon xizmatlarni taqdim etishi qayd etiladi. Muallifga ko‘ra, fintech kompaniyalari raqamli platformalarga asoslangan bo‘lib, mijozlarga ilovalar orqali 24/7 xizmat ko‘rsatish imkonini beradi. Bunda an’anaviy banklarning filiallarga bog‘langan, byurokratik to‘siqlarga ega tizimiga nisbatan sezilarli ustunlik mavjud.

Arner, Barberis va Buckley (2016) o‘zining “The Evolution of Fintech: A New Post-Crisis Paradigm?” nomli fundamental ishida fintech’ning iqtisodiy inqirozdan so‘nggi moliyaviy tizimdagi o‘rni va roli haqida so‘z yuritadi. Ular fintechni moliyaviy xizmatlar sohasida innovatsiyalarga asoslangan transformatsion kuch sifatida ta’riflab, an’anaviy banklarga nisbatan tezkor moslashuvchanlik va ijodkorlikni asosiy farq sifatida ko‘rsatadi.

C. Gozman va R. Willcocks (2019) esa “The impact of fintech on the banking industry” nomli tadqiqotida fintech kompaniyalari bank bozoriga raqobatni kuchaytirib, an’anaviy banklarni raqamli yangilanishga majbur qilayotganini tahlil qiladi. Ular fintech’ni texnologik afzalliklarga ega, tezkor qarorlar qabul qiluvchi, foydalanuvchi tajribasiga asoslangan xizmatlarni taklif etuvchi yangi moliyaviy ekotizim deb ta’riflaydi. Shu bilan birga, bu mualliflar an’anaviy banklarning mustahkam tartibga solinuvchi tizimi va xavfsizlik infratuzilmasi kabi ijobiy jihatlariga ham urg‘u beradi. Yana bir e’tiborga molik manba, **Uzbekistan Banking**

Association (2022) tomonidan chop etilgan hisobotda, O‘zbekistonda fintech xizmatlarining rivojlanishi, mobil banking, QR to‘lov tizimlari va raqamli hamyonlar orqali moliyaviy inkluzivlikni kengaytirayotganligi ta’kidlanadi. Mazkur manbada fintech’ning an’anaviy banklar bilan integratsiyalashuv jarayoni, regulyatorlar roli va xavfsizlik choralari haqida ma’lumotlar keltirilgan.

Xalqaro Valyuta Jamg‘armasi (IMF) 2021 yildagi hisobotida esa fintech va banklar o‘rtasidagi hamkorlik modellari, ayniqsa, “open banking” va “API-integratsiya” kabi texnologiyalar orqali yuzaga kelayotgan sinergetik aloqa uslublari yoritilgan. Hisobotda fintech kompaniyalarining innovatsion mahsulotlar orqali bank xizmatlarining sifatini oshirayotganligi, biroq regulyativ-huquqiy muvofiqlik jihatdan hali to‘liq pishmaganligiga urg‘u beriladi. Yuqoridagi adabiyotlar tahlili shuni ko‘rsatadiki, fintech va an’anaviy banklar o‘rtasidagi asosiy tafovut texnologik yangiliklar, mijozlar bilan aloqadagi yondashuvlar, xizmat ko‘rsatish tezligi, xarajatlar samaradorligi va regulyatsion muhit bilan bog‘liq. Fintech kompaniyalari mijozlarga qulaylik, tezkorlik va innovatsion xizmatlar taqdim etishda yetakchi bo‘lsa-da, an’anaviy banklar esa ishonchlilik, barqarorlik va tartibga solinishda afzalliklarga ega. Shu sababli, bugungi kunda ushbu ikki tizim o‘zaro raqobatlasha borib, bir-birini to‘ldiruvchi muqobil moliyaviy xizmatlar manbai sifatida shakllanmoqda.

1. **Texnologik poydevor va xizmat ko‘rsatish uslubi**

Fintech kompaniyalari o‘z faoliyatini to‘liq raqamli platformalarda olib boradi. Ular mijozlarga xizmatlarni internet orqali, mobil ilovalar, veb-saytlar yoki sun’iy intellekt yordamida ko‘rsatadi. Misol uchun, **PayPal**, **Revolut**, **Stripe**, yoki **Chime** kabi fintech brendlari dunyo bo‘ylab millionlab foydalanuvchilarga onlayn to‘lovlar, valyuta konvertatsiyasi va mikro-moliyaviy xizmatlar taqdim etmoqda. Bu xizmatlar nafaqat tez, balki qulay interfeys va foydalanuvchiga yo‘naltirilgan dizayn bilan ajralib turadi.

An’anaviy banklar esa ko‘pincha filiallar orqali xizmat ko‘rsatadi va aksariyat hollarda yuzma-yuz muloqotga tayanadi. Garchi ko‘plab banklar so‘nggi yillarda raqamli xizmatlarni joriy etgan bo‘lsa-da, ularning operatsiyalari fintech kompaniyalariga qaraganda sekinroq, qog‘ozbozlik ko‘proq bo‘lishi mumkin.

Iqtibos: Moliyaviy tahlilchi Brett King o‘zining “Bank 4.0” nomli kitobida shunday yozadi:
“Banklar – joy emas, ular xizmatdir. Endilikda foydalanuvchi bankka borishi emas, bank foydalanuvchining o‘zigagina kelishi kerak.”

2. **Moslashuvchanlik va innovatsion salohiyat**

Fintech kompaniyalari kichik va chaqqon jamoalar asosida tashkil etilgan bo‘lib, bozor ehtiyojlariga moslashishda yuqori darajada moslashuvchanlikka ega. Ular sun’iy intellekt yordamida kredit reytinglarini aniqlaydi, blokcheyn asosida xavfsiz tranzaksiyalarni amalga oshiradi, va mijozlar tajribasiga asoslangan interaktiv interfeyslar yaratadi.

An’anaviy banklar esa odatda o‘zgarishlarga nisbatan sustroq munosabat bildiradi. Ularning infratuzilmasi murakkab va markazlashgan bo‘lgani sababli yangiliklarni joriy etish ko‘proq vaqt va resurs talab qiladi.

3. **Xizmatlar ko‘lami va ixtisoslashuv**

Fintech kompaniyalari odatda bir yoki bir necha yo‘nalishga ixtisoslashgan bo‘ladi. Masalan, **Klarna** – bo‘lib to‘lash tizimi, **Robinhood** – investitsiya platformasi, **TransferWise (Wise)** – xalqaro pul o‘tkazmalari. Bu ularga o‘z sohasida yetakchi bo‘lish imkonini beradi.

An’anaviy banklar esa keng qamrovli xizmatlarni bir joyda taklif etadi: omonatlar, kreditlar, ipoteka, valyuta ayirboshlash, va boshqalar. Bu ko‘p funksiyali model qulaylik yaratadi, biroq har bir sohada alohida ixtisoslashish imkoni cheklangan bo‘ladi.

4. **Huquqiy muhit va ishonchlilik**

Fintech kompaniyalari ko‘pincha nisbatan yangi tartibga solish me’yorlari asosida ishlaydi. Bu esa ularni ba’zan xavfga ochiqroq holga keltiradi. Shu bilan birga, foydalanuvchilar orasida ishonch darajasini shakllantirishda ko‘proq harakat qilishlariga to‘g‘ri keladi.

An’anaviy banklar esa markaziy banklar va boshqa regulyatorlar tomonidan qat’iy nazorat qilinadi. Ularning xizmatlari ko‘p yillik tajriba va qonunchilik bilan mustahkamlangan. Shu sababli, odatda yirik mijozlar va yirik korxonalar ularni afzal ko‘rishadi.

5. **Raqamli banklar – fintech va an’anaviy banklar orasidagi o‘tish shakli**

So‘nggi yillarda dunyoda **raqamli banklar (digital banks)** tushunchasi keng tarqalmoqda. Bu turdagi banklar to‘liq raqamli muhitda ishlaydi, lekin ular an’anaviy banklar singari rasmiy litsenziyaga ega va regulyatorlar tomonidan nazorat qilinadi. Raqamli banklar fintech texnologiyalarini qo‘llagan holda an’anaviy bank xizmatlarini ko‘rsatadi. Misol sifatida **Monzo**, **N26**, yoki **Tinkoff** kabi raqamli banklar mijozlarga mobil ilovalar orqali barcha operatsiyalarni (hisob ochish, to‘lovlar, kreditlar, hisob yuritish) tez va qulay tarzda amalga oshirish imkonini beradi. Ular fintech tezkorligini va bank tizimi ishonchliligini birlashtiradi.

6. **Axborot xavfsizligi va maxfiylik masalalari**

Fintech platformalari, ayniqsa ochiq kodli va mobil asosli tizimlar, kiberxavfsizlik tahdidlariga ochiqroq bo‘lishi mumkin. Ular mijozlarning shaxsiy ma’lumotlari va moliyaviy operatsiyalarini doimiy himoya qilish uchun kuchli shifrlash, ikki bosqichli autentifikatsiya, biometrik tekshiruv kabi zamonaviy xavfsizlik mexanizmlaridan foydalanadi.

An’anaviy banklar esa ko‘p yillik tajriba asosida xavfsizlik tizimlarini rivojlantirgan. Ularning xavfsizlik siyosati ko‘proq konservativ bo‘lsa-da, ba’zida texnologik yangilanishlar sust kechadi. Shunga qaramay, ular ko‘plab foydalanuvchilar uchun xavfsizlik va barqarorlik timsoli hisoblanadi.

7. **Foydalanuvchi ishonchi va reputatsiya**

Fintech kompaniyalari foydalanuvchilar bilan interaktiv aloqani afzal ko‘radi – mobil ilovalarda fikr-mulohazalar, sun’iy intellekt yordamida shaxsiylashtirilgan maslahatlar va tez javob berish tizimi mijozlar tajribasini sezilarli darajada yaxshilaydi. Ammo ular uchun asosiy muammo – foydalanuvchilarning doimiy ishonchini qozonish va uni saqlab qolish.

An’anaviy banklar esa o‘z brendlari va ko‘p yillik tarixiga tayangan holda foydalanuvchilar orasida barqaror ishonchga ega. Ko‘pchilik mijozlar hali-hanuz katta miqdordagi mablag‘ni fintech orqali emas, balki rasmiy banklar orqali saqlashni afzal ko‘rmoqda.

Fintech, ya’ni moliyaviy texnologiyalar, bugungi kunda global miqyosda tezkor rivojlanayotgan soha bo‘lib, zamonaviy jamiyatning eng muhim ehtiyojlarini qondirishga xizmat qilmoqda. Ushbu texnologiyalarning asosiy afzalligi shundaki, ular foydalanuvchilarga raqamli platformalar orqali tez va samarali moliyaviy xizmatlarni taqdim etadi. Fintech kompaniyalari, mobil ilovalar, sun’iy intellekt, blokcheyn va boshqa innovatsion texnologiyalar yordamida xizmatlarni eng qisqa vaqt ichida va minimal xarajat bilan taqdim etish imkoniyatini yaratadi. Buning natijasida, fintech texnologiyalari nafaqat tezkor xizmatlar, balki yanada ko‘proq va keng qamrovli moliyaviy inklyuziya imkoniyatlarini ham taqdim etadi. Masalan, rivojlanayotgan mamlakatlarda ko‘plab aholining an’anaviy bank tizimiga kirish imkoniyati yo‘q, ammo fintech platformalari orqali ular mobil banking, raqamli hamyonlar va mikro kreditlash kabi xizmatlardan foydalanish imkoniyatiga ega bo‘ladilar. Shuningdek, fintech texnologiyalarining o‘ziga xos xususiyati shundaki, ular pandemiya davrida ham jadal rivojlanib, raqamli iqtisodiyotning barqarorligini ta’minlashga yordam berdi. Ko‘plab kompaniyalar o‘z faoliyatini fintech xizmatlari orqali davom ettirdi, fuqarolar esa moliyaviy xizmatlarga uzluksiz kirish imkoniyatini topdi. Shunday qilib, fintech texnologiyalari nafaqat iqtisodiy o‘sishni rag‘batlantiradi, balki yangi bozorlar va imkoniyatlar yaratib, global miqyosda raqamli iqtisodiyotning rivojiga katta hissa qo‘shmoqda. Jahon Banki ta’kidlaganidek, fintech iqtisodiy inklyuziyani ta’minlash va moliyaviy xizmatlardan chetda qolgan qatlamlarni tizimga jalb qilish orqali barqaror o‘sishni ta’minlaydi. Shu sababli, fintech texnologiyalarining roli va dolzarbligi bugungi kunda yanada oshib bormoqda, va ular nafaqat moliyaviy tizimni, balki jamiyatning iqtisodiy va ijtimoiy taraqqiyotini shakllantiruvchi muhim omilga aylanishi mumkin.

Xulosa

Fintech va an’anaviy banklar o‘rtasidagi farqlar, ayniqsa moliyaviy texnologiyalar sohasining rivojlanishi va uning iqtisodiy tizimga ta’siri tobora kuchayib bormoqda. Fintech kompaniyalari innovatsion texnologiyalar yordamida moliyaviy xizmatlarni tezkor va qulay tarzda taqdim etish imkonini yaratmoqda. Raqamli platformalar, sun’iy intellekt, blokcheyn va boshqa ilg‘or texnologiyalar bilan quvvatlangan fintech kompaniyalari, foydalanuvchilarga an’anaviy banklardan farqli o‘laroq, vaqtga bog‘liq bo‘lmagan va geografik cheklovlarsiz xizmatlarni taklif etadi. Bu, ayniqsa, rivojlanayotgan mamlakatlarda moliyaviy inklyuziya, ya’ni bank tizimiga kira olmaydigan aholining keng qatlamlarini moliyaviy tizimga jalb qilishga yordam beradi.

Shuningdek, fintech texnologiyalarining dolzarbligi nafaqat foydalanuvchilarga xizmat ko‘rsatish samaradorligini oshirishda, balki yangi iqtisodiy imkoniyatlar yaratishda ham ko‘rinadi. Innovatsion startaplar, investorlar va texnologiya kompaniyalarining integratsiyasi orqali fintech sohasi yangi

bozorlar ochib, global miqyosda raqamli iqtisodiyotning rivojiga turtki bo‘lmoqda. Pandemiya davrida fintech xizmatlarining o‘sishi bu sohaning post-pandemiya davrida ham iqtisodiy barqarorlikka ta’sir ko‘rsatishini ko‘rsatdi. Ko‘plab kompaniyalar va jismoniy shaxslar, an’anaviy bank tizimlaridan foydalanmasdan, fintech xizmatlaridan foydalanishga o‘tishdi va bu jarayon moliyaviy xizmatlarni tez va samarali olishni istagan foydalanuvchilar uchun muhim omilga aylandi.

Biroq, fintechning rivojlanishi bilan birga, xavfsizlik va maxfiylik masalalari ham o‘ta dolzarb bo‘lib qolmoqda. Fintech kompaniyalari ko‘plab zamonaviy xavfsizlik tizimlarini o‘rnatgan bo‘lsalar-da, ularning himoyasi ko‘pincha kiberxavfsizlik tahdidlariga nisbatan zaifroq bo‘lishi mumkin. Shu bilan birga, an’anaviy banklar barqaror va ishonchli xavfsizlik tizimlari bilan tanilgan bo‘lib, ko‘plab foydalanuvchilar uchun ularga ishonch darajasi yuqori. Shuning uchun, fintech va an’anaviy banklarning integratsiyasi, yoki raqobatlashishi orqali yangi xizmatlar va texnologiyalar ishlab chiqilishi kerak, bu esa oxir-oqibat foydalanuvchilarga ko‘proq imkoniyatlar yaratadi.

Moliyaviy texnologiyalar sektori uchun yirik o‘sish imkoniyatlari mavjud. Fintech sohasidagi innovatsiyalar, moliyaviy inklyuziya, xavfsizlikni oshirish va texnologik moslashuvchanlik kabi masalalar global iqtisodiyotni shakllantiruvchi omillarga aylanishi mumkin. Shu bilan birga, regulyatorlar fintechni nazorat qilishda yangi yondashuvlarni ishlab chiqishi zarur, chunki moliyaviy texnologiyalar va an’anaviy banklar o‘rtasida yangi ekosistema shakllanmoqda.

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O‘ZBEKISTONDA NANOTEXNOLOGIYA SOXASINI RIVOJLANTIRISH KADRLAR TAYYORLASH

Annotatsiya: *Ushbu maqolada qurilish va arxitekturada nanotexnologiyalarni qo‘llash va ularni mamlakatimiz hududlarida rivojlantirish bo‘yicha kadrlar masalalari, shuningdek, mamlakatimiz hududlarida yangi texnologiyalarni joriy etish, ilm-fanning konsentratsiyasi bo‘lishi mumkin bo‘lgan iqtisodiy zonalarda nanotexnologiya va texnoparklar bo‘yicha maxsus kurslarni joriy etish muhokama qilinadi.*

Kalit so‘zlar: *Nanotexnologiya, axborotni rivojlantirish, kadrlar muammosi, kadrlar masalasi, texnik xodimlar, maxsus kurslar, qurilish texnologiyalari, nanomateriallar, malakali o‘qituvchilar.*

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TRAINING OF PERSONNEL FOR THE DEVELOPMENT OF NANOTECHNOLOGY SOX IN UZBEKISTAN

Annotation: *This article discusses personnel issues in the application of nanotechnology in construction and architecture and their development in the regions of our country, in addition, to introduce new technologies in the regions of our country, introduce special courses on nanotechnology and technoparks in economic zones where science could be concentrated.*

Keywords: *Nanotechnology, information development, personnel problem, personnel issue, technical personnel, special courses, construction technologies, nanomaterials, qualified teachers.*

2017-2021 yillarda O‘zbekiston Respublikasini rivojlantirishning beshta ustuvor yo‘nalishi bo‘yicha Harakatlar strategiyasi va O‘zbekiston Respublikasida Ma’muriy islohotlar konsepsiyasida belgilangan vazifalarni izchillik bilan amalga oshirish masalasiga bugungi kunda alohida e’tibor qaratilmoqda. Muhtaram Prezidentimiz Sh.M.Mirziyoyev tomonidan olib borilayotgan keng qamrovli islohotlar natijasida so‘ngi yillarda O‘zbekistonda yangi sanoat obyektlari, turar-joylar, ta’lim va tibbiyot muassasalari va boshqa ijtimoiymaishiy obyektlarni qurish hamda mavjudlarini rekonstruksiya qilish bo‘yicha keng ko‘lamli ishlar amalga oshirilib, ularda ilg‘or arxitektura va zamonaviy, yuqori texnologiyali qurilish materiallari qo‘llanilmoqda.

Bugungi kunda arxitektura va qurilishda nanotexnologiyaning muhim xususiyatlari va imkoniyatlarini, xamda nanotexnologiyani joriy etishni chegaralovchi tashqi va ichki omillarni aniqlash va ulardan amalda samarali foydalanish muhim ahamiyatga ega. Shunday ekan, bugungi kunda arxitektura va qurilishda nanotexnologiyalarni muvaffaqiyatli joriy etish borasida to‘plangan ilg‘or xorijiy va mahalliy tajribalarni tahlil etish va o‘rganish talab etiladi.

Tahlillarning ko‘rsatishicha arxitektura va qurilishda innovatsiyalarning quyidagi turlarini ajratib ko‘rsatish mumkin:samarali innovatsion qurilish texnologiyalarini joriy etish, hamda nanotexnologiyalar asosida yaratilgan yangi va sifatli nanokonstruksiyalarni, nanomateriallarini arxitektura, dizayn va qurilish soxalarida qo‘llash; quriladigan obyektlarning me’moriy va rejaviy tavsifi nuqtai nazaridan nanotexnologiyalar asosida yangi yechimlarni joriy etish.

Nanotexnologiya dunyoni yangi texnologik inqilobga olib boradi va nafaqat iqtisodiyotni, balki inson muhitini ham butunlay o‘zgartirishi mumkin. Nanotexnologiya XX-asrning yeng katta kashfiyoti bo‘lib, u ko‘plab xorijiy mamlakatlarda qurilish va arxitekturada keng qo‘llanilgan. Nanotexnologiya - bu yangi kimyoviy, fizik, biologik xususiyatlarga ega bo‘lgan obyektlarni olish uchun nano o‘lchovli elementlardan (1-100 nm) tashkil topgan tuzilmalar va tizimlarni o‘rganish, ishlab chiqarish va ulardan foydalanishda qo‘llaniladigan usul va uslublar to‘plami. Professor I. Seredyuk o‘zining "Nanotexnologiyadan nanoarxitekturaga" maqolasida shunday yozadi: “Zamonaviy me’morchilikda unib chiqa boshlagan nihollar madaniy va sivilizatsiyaviy ahamiyati jihatidan uslublarning yo‘naltirilgan oqimlarining an’anaviy evolyutsion o‘zgarishlari doirasidan chiqib ketishi tobora ravshanlashib bormoqda”.

O‘zbekistonda zamonaviy milliy iqtisodiyot va xususan qurilish industriyasi rivojlanishining eng istiqbolli yo‘nalishlaridan biri nanotexnologiyalardan foydalangan holda materiallarni yaratish hisoblanadi. Xozirgi kunda xorijiy mamlakatlardagi arxitektura va qurilish soxasida nanotexnologiyalardan foydalangan xolda erishilgan tajribalar va yutuqlarni har tomonlama o‘rganish, hamda ulardan arxitektura, qurilish va dizayn sohalarida keng ko‘lamda Respublikamiz xududlarida qo‘llashni yo‘lga qo‘yish juda muhim. Xorijiy davlatlarda nanotexnologiyalar asosida ishlab chiqilgan qurilish materiallaridan foydalangan holda barpo etilgan bino va inshoatlarni misol tariqasida ko‘rishimiz mumkin. Masalan, Miserikordiyadagi Dives cherkovi Prekast beton va shishadan tayyorlangan bu oq struktura snaryad yoki gul barglariga o‘xshash uchta yegri tuzilmadan iborat. TX Active ® texnologiyasi yordamida ishlab chiqarilgan sement titan dioksid (Tio2) nanoparchalari ushbu cherkovining ko‘zni qamashtiruvchi oqligini ta’minlaydi. Fotokataliz tufayli bunday sementning sirti o‘z-o‘zidan tozalanadi.

Pekindagi Grand milliy teatr Gumbazning shisha yuzasi doimo shaffof, chunki u Tio2 katalizatorining yupqa plyonkasi bilan qoplangan, buning natijasida gumbaz fotokataliz ta’sirida o‘z-o‘zidan tozalanadi.

Sochidagi uglerod tolasidan yasalgan ko‘prik "NTIC Apatek-Dubna" kompaniyasi tomonidan ishlab chiqilgan kompozit materiallardan tayyorlangan.

Konstruksiyalar - uglerod tolasi, karbon tolalari, naychalar, nanomediyalardan foydalangan.

O‘zbekistonda nanotexnologiya soxasidagi fundamental tadqiqotlar natijalari asta-sekin arxitektura va qurilishda o‘z o‘rnini topmoqda. Arxitektura va qurilishda nanomateriallardan foydalanish arxitektor va dizaynerlarning g‘oyalarini, tasavvurlarini cheklamasdan, qurilish xarajatlarini xamda bino va inshootlarni qurish sur’atini kamaytirmasdan, arxitektura ijodkorligining estetikasi va orgonomikasini kengroq ifodalashga imkon beradi.

Arxitektura va qurilishda nanotexnologiyadan foydalanish yuqori texnologik materiallar nanostrukturalangan po‘latlar (mahalliy bazalt metallar), keramika, shisha, polimerlar, sement (turli markalardagi betonlar) kompozitlarni olish uchun asos bo‘lib xizmat qiladi va bugungi kunda me’morchilik va qurilish sohalarida katta innovatsiyalarga yo‘l ochuvchi nanotexnologlardan foydalanish hisoblanadi. Shuning uchun Respublikamiz xududlarida arxitektura loyixalari va qurilish soxalarida nanotexnologiyani rivojlantirish uchun birinchi navbatda kadrlar tayyorlash dolzarb masala xisoblanadi.

O‘zbekiston Respublikasi Prezidentining 2018 yil 2-apreldagi “Qurilish soxasida davlat boshqaruvi tizimini tubdan takomillashtirish chora tadbirlari to‘g‘risida”gi 5483-PF farmonida arxitektura, loyixalash va qurilish soxasida malakali kadrlarni tayyorlash, ixtisostirilgan ta’lim muassasalarida o‘quv jarayonining darajasi va sifatini tubdan yaxshilash, qurilish soxasida jumladan, chet eldagi yetakchi ilmiy-tadqiqot muassasalarida soxa xodimlarini qayta tayyorlash va malakasini oshirishga katta etibor qaratilgan.

So‘nggi yillarda Respublikamizda ilm-fan va texnologiya ma’lum bir muhim bosqichga aylandi, nanofan va nanotexnologiyaning rivojlanishi, bugungi kunda nanoindustriya, fan va texnikaning eng istiqbolli yo‘nalishidir. Shunday ekan O‘zbekiston Respublikasining jadal rivojlanishini innovatsion jarayonlarning iqtisodiyotning barcha sohalarida keng qo‘llanishisiz tasavvur qilib bo‘lmaydi. Zamonaviy milliy iqtisodiyot va xususan qurilish industriyasi rivojlanishining eng istiqbolli yo‘nalishlaridan biri notexnologiyalardan foydalangan holda materiallarni yaratish hisoblanadi. Respublikamizda nanotexnologiyaning rivojlanishida yangiliklarni kashf etish soxasida olimlarimiz tomonidan katta amaliy ishlar olib borilmoqda. Lekin nanotexnologiyalarni arxitektura va qurilish soxasida qo‘llash va ularni mamlakatimiz xududlarida rivojlantirish xamda xududlarda yangi texnologiyalarni joriy etish, nanotexnologiya va texnoparklar bo‘yicha kadrlar tayyorlash, qayta tayyorlash va malakalarini oshirish muxim o‘rin tutadi. Amerikalik olim YE.Teller shunday deydi: “Nanotexnologiyani birinchi bo‘lib egallagan kishi keyingi asrning texnosferasida yetakchi o‘rinni egallaydi” Shunday ekan, bugun biz mamlakatimizda nanotexnologiyaning rivojlanishi uchun bor imkoniyatlardan foydalanib, shu soxada mutaxassis kadrlar tayyorlashimiz, ularning malakalarini oshirish, qayta tayyorlash ishlarini amalga oshirishimiz zarur, yani;

- iqtidorli yoshlarni, shu jumladan talabalar, ilmiy xodimlar, professor-o‘qituvchilar tahliliy fikrlashi uchun zarur sharoitlar yaratish;

-yoshlarni innovatsion tadbirkorlik faoliyatiga jalb qilish, biznes-inkubatorlar va tajriba maydonchalari ishini tashkil etish, ularga moliyaviy, marketing, yuridik va konsalting xizmatlari ko‘rsatish orqali ko‘maklashish;

-tashabbuskor yoshlar tomonidan taklif qilingan startap loyihalarni rivojlantirish uchun yagona maydon tashkil etish;

-startap loyihalarni amalga oshirishda ularni qisman moliyalashtirish asosida qo‘llab-quvvatlash va muassislar tarkibiga kirish.

Mamlakatimiz hududlarida nanotexnologiya soxasini rivojlantirish va kadrlar tayyorlashda quyidagilarni amalga oshirish maqsadga muvofiq deb xisoblaymiz:

Ilmiy-ta’limiy innovatsion laboratoriyalar va nanotexnologiya markazlarini, texnoparklarni tashkil etish;

-Arxitektura, loyixalash va qurilishda nanotexnologiya soxasida malakali kadrlarni tayyorlash, ixtisostirilgan ta’lim muassasalarida innovatsiyalarni tadbiq etish;

Nanotexnologiya soxasida innovatsiyalarni qo‘llay oladigan mutaxassislarni tayyorlash, qayta tayyorlash va malakasini oshirish, mutaxassis kadrlarni xorijiy davlatlarga stajirovka va malaka oshirishga yuborish.

Arxitektura va qurilishda nanotexnologiyani rivojlantirishda respublikamizning oliy ta’lim va ilmiytadqiqot muassasalari bilan qurilish tashkilotlari orasida o‘zaro integratsion aloqalarni tashkil etish;

Arxitektura, loyixalash va qurilish soxasida nanotexnologiyalarni joriy etish borasidagi meyoriyhuquqiy bazani takomillashtirish.

Mamlakat mintaqalarida nanobiznes rivojlanishini ta’minlash uchun barcha chora-tadbirlar tizimini ishlab chiqish.

Maqola yakunida texnologiyada innovatsiyasiz rivojlanish yo‘q, ayniqsa XXI - asr zamonaviy dunyomizda, yuksak texnologiyalar asri kuchli va taraqqiy etgan davlat poydevori uchun hukumat sohalarida rivojlangan tizim xususiyatlari muhim rol o‘ynaydi, innovatsion g‘oyalar va nanotexnologiyalarga muvofiq arxitektura va qurilishni rivojlantirish hisoblanadi.

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VARIABILITY OF CHEMICAL PROPERTIES OF MOUNTAIN BROWN SOILS

Abstract: *This article studies the morphological structure, physical and mechanical composition, agrochemical properties and productivity potential of mountain brown soils typical of the mountainous regions of Uzbekistan. Studies have shown the variability of the amount of moisture, humus, nutrients (nitrogen, phosphorus, potassium) in mountain brown soils, depending on the vegetation cover of the lands located in mountainous regions, climatic conditions and leaching processes. The prospects for increasing the fertility of these soils through land reclamation and agrotechnical measures are also discussed. The article substantiates the importance of soils in the production of agricultural products and the need for their rational use.*

Keywords*: mountain brown soils, soil properties, humus, nutrients, soil fertility, leaching, agroecological condition, physical and mechanical composition.*

Introduction. Mountain brown soils are the main soil type of the mountain region, and are the most fragile subtype of brown soils, immediately after dark brown soils, starting at an altitude of 1000-1150 m above sea level. Here, of course, mountain soils differ from all other soils, including dark brown soils, distributed on the plains, by their structure, chemical, physical properties, and natural soil formation processes.

We will give the morphological characteristics of brown demineralized soils on the example of section 17.

Section 17. May 18, 2024. R.S. Bobonorov, (L.Tursunov). Located on the northern slope of the mountain, approximately 1 km west of the middle part of the villages of Bodomzor and Varganza. Slope 5-80. The vegetation is diverse - grasses (broad-leaved), shrubs, (broad-leaved), and junipers are abundant. The soil surface is soft, with granular aggregates, and almost no stones, despite being well-moistened. There are no signs of erosion. The soil is brownish-alkaline.

$A_{чим}$ 0-6 cm. very firmly packed dark brown, darkened by rain, medium loam, granular, well-crushed aggregates, many "soil corals" are found, there are no signs of erosion on the soil surface, no stones, only the soil surface is denser due to the presence of 1-2 cm thick roots, consisting of grass and tree leaves and trunk remains, insect nests are not well visible, the transition to the next layer is gradual through the number, color and density of plant roots.

$A_{ч.оқ}$ 6-10 cm. deep, brownish-brown in color, well-moistened, loose, medium-grained, with lumps of various sizes and shapes, especially around the roots "soil corals", well-crumbling aggregates, there are roots of shrubs and trees

with a diameter of 10-30 mm., there are many burrows of soil insects, filled with debris, small stones are not found, gradually changing color to the next layer.

Bк 10-29 cm. brownish-gray, slightly grayish-blackish, with well-absorbed walnut-like lumps, slightly compacted compared to the upper layer, heavy clay with a large number of plants, shrub and tree roots and "soil corals" are moistened, there are no stones at all, the soil is well worked by insects, does not boil under the influence of 10% HCl, there are vertical small cracks in the layer, the transition to the next layer is gradual through color.

B_{2}к 29-53 cm. lighter brownish-brown, the moisture content decreases compared to the upper layer, heavy clay, there are lumps of various sizes and shapes, they are well crushed, the layer is well worked by a large number of insects, the roots of plants, shrubs, trees of various sizes, they are full of waste, the number of "soil corals" decreases sharply, the middle and lower parts of the layer boil under the influence of 10% HCl acid. The subsequent transition occurs gradually through the color.

B_{3}к 53-86 cm. Light brown, slightly grayish, not very moist, heavy loam, aggregate-loamy structure that crumbles quickly, the number of roots is significantly reduced, there are many insect nests, but in the middle, especially in the lower parts of the layer, white streaks and "white eyes" appear, it boils well under the influence of 10% HCl acid, sometimes small stones are found, the transition to the next layer is gradual through the blanching color.

C+ 86-16 cm. A layer of yellowish, slightly brownish, poorly moistened, loose, medium loamy, very quickly eroded "pseudo-aggregate" fragments, occasional white grains, very few small roots (but also roots of trees and grasses) are found, and the activity of soil animals is also rarely manifested, consisting of a uniform structure of lechsimon beds.

We have seen that the morphological characteristics of the above-mentioned carbonate, typical and alkalized soils differ slightly from each other. The formation of these soils is mainly determined by the relief conditions, especially the solar energy of the mountain slopes. However, it should be noted that alkalized brown soils are rarely distributed in the Kitab-Shakhrisabz basin.

The amount of humus and its distribution along the cross-section are different in typical and alkalized soils. The geographical location of typical brown soils (mainly the northern and northwestern sides of the mountain slopes), the richness of grass plants, firstly, leads to the formation of a large and well-developed turf layer, secondly, a thick humus-rich fine-grained layer that gives the soil a dark color, and thirdly, to a low degree of erosion. In the turf layer of typical brown soils, humus fluctuates between 4.0-4.5%, in the subsoil layer - 2.9-3.0%, and in the lower layers - 0.4-0.2%. Changes in the humus content in such a genetic layer primarily cause the distribution along the cross-section of total nitrogen, and to a lesser extent - total phosphorus and potassium. These soils are also considered carbonate soils. Humus saturation leads to a sharp increase in the physicochemical indicator - absorption capacity. In the sod layer, the absorption capacity is 22-23, in the turf layer - 18-19, and in the following layers - 7.0-16.0 mg.eq. per 100 g of soil. This, of course, is

the main indicator expressing the positive chemical properties of these soils. If we compare the amount of humus in typical and carbonate brown soils at a depth of 10-30 cm, that is, after the subsoil layer (excluding 10 sections with low and moderate erosion), the amount of humus in this layer of typical soils is 2-2.5 times less. This, according to our data, leads to an increase in the total humus reserve in the 0-50 cm layer to 145-150 tons, that is, more than 2 times (Table 1).

Table 1.

Chemical indicators of mountain brown soils

Depth in cm	Rotten %	General %			In carbonate CO_2	Absorption capacity mg/eq 100 gr	Protection, t/ha		
		Nitrogen	phosphorus	potassium			layer	Chirin Di	nitrogen
1	2	3	4	5	6	7	8	9	10
Section 1. Brown, carbonate, yrta sand, rough, strongly eroded, south slope 5-70.									
0-4	2,63	0,186	0,170	2,211	8,6	17,23	0-30	47,9	4,4
4-11	1,92	0,142	0,130	1,970	9,30	14,46	30-50	12,4	1,3
11-26	0,83	0,075	0,110	1,830	11,0	10,11	0-50	60,3	5,7
26-50	0,43	0,045	0,090	1,942	12,0	7,82			
Section 10. Brown carbonate, sandy loam, rough, moderately eroded southwest slope 3-50.									
0-5	3,16	0,283	0,215	2,110	8,3	18,03	0-30	89,8	7,1
5-17	2,01	0,172	0,149	1,835	8,9	12,06	30-50	31,3	3,1
17-43	1,86	0,123	0,120	1,730	9,3	10,11	0-50	121,1	10,2
43-78	0,72	0,095	0,090	1,700	19,0	9,13			
Section 12. Brown carbonate, yrta sand, rough, strongly eroded southern slope 5-70.									
04	2,15	0,170	0,163	1,930	9,5	16,25	0-30	49,1	3,6
4-11	1,60	0,093	0,108	1,855	9,7	11,13	30-50	17,2	1,2
11-35	0,80	0,072	0,090	1,705	11,1	9,16	0-50	66,3	4,8
35-64	0,55	0,040	0,085	1,700	11,2	8,55			
Section 13. Brown typical, yrta sand, rough, less eroded, north-east slope 3-50.									
0-6	4,48	0,345	0,240	2,33	8,6	23,6	0-30	120,8	10,1
6-14	3,11	0,290	0,170	2,013	9,0	19,00	30-50	24,8	2,2
14-31	2,16	0,195	0,113	1,980	9,5	16,26	0-50	145,6	12,3
31-69	0,82	0,072	0,098	1,837	11,5	10,11			
69-110	0,46	0,043	0,090	1,715	10,0	7,82			
Section 15. Brown typical, yrta sand, rough, less eroded, west slope 4-60.									
0-6	4,16	0,313	0,235	2,355	5,0	22,15	0-30	107,1	7,1
6-13	2,95	0,192	0,171	2,115	6,2	18,10	30-50	43,7	3,0
13-42	1,82	0,110	0,120	1,930	7,8	15,26	0-50	150,8	10,1
42-76	0,95	0,098	0,100	1,800	8,2	12,00			
76-95	0,80	0,075	0,025	1,750	9,0	10,05			
Section 3. Brown, yrta sand is decalcified, the northern slope with little erosion is 2-30.									
0-6	5,46	0,422	0,240	2,431	0,5	29,15	0-30	140,0	10,9
6-14	3,55	0,303	0,180	2,121	1,5	21,00	30-50	46,0	4,0
14-44	1,98	0,175	0,130	1,983	3,0	16,25	0-50	186,0	14,9
44-77	0,86	0,072	0,100	1,901	6,0	10,19			
77-98	0,50	0,046	0,090	1,786	7,0	8,16			
Section 17. Brown, coarse sand, decalcified, moderately eroded northern slope 3-50.									
0-6	5,26	0,410	0,246	2,420	1,0	24,15	0-30	117,2	8,4
6-10	3,15	0,298	0,193	2,010	1,5	20,40	30-50	27,4	2,7

10-29 29-53 53-86	1,92 0,98 0,83	0,112 0,095 0,079	0,155 0,140 0,105	1,950 1,909 1,803	4,5 6,1 7,2	15,25 12,70 10,90	0-50	144,6	11,1

The humus condition of brown decalcified soils is considered to be better than that of other soils. Here, of course, the soils of the slopes of the mountains are fertile, with little solar energy, rich in plants (various species), shrubs and juniper trees. ташкил топган географик ландшафт хос былади. Албатта бундай шароитда The soil is not far from being rich in plant residues, both above and below the soil surface, compared to the other soils described above. On the other hand, the temperate climate creates the opportunity for the formation of humus. This is probably why the humus content in the sod layer of alkalized soils is less than 5%, and in the subsoil it is 3.0-3.5%, and in the first 0-50 cm it fluctuates around 2.0%. Total nitrogen is stored in these layers in the ratio of 0.4-0.7%. The richness of humus and total nitrogen leads to their large total reserves. In particular, the humus reserve in the 0-30 cm layer of alkalized soils is 117-140 t. ha, 30-50 cm 27-40, and 0-50 cm 144-186 t. ha. Total nitrogen is also in the range of 8-10, 3-4 and 11-14 t. ha in these layers. These indicators are much higher than the humus and nitrogen reserves characteristic of these layers of the above-mentioned carbonate and typical alkaline soils (Table 41). The absorption capacity of humus in the upper layer is 24-26, and in the subsoil layer 20-21 mg.eq. per 100 g of soil. The absorption capacity indicator in the second half-meter layer of the section is 8-10 mg.eq. 100 g of soil, approaching the indicator characteristic of typical soils (Table 1). In conclusion, it can be said that alkalized brown soils differ from other mountain soils in the amount of CO2 in carbonates in the trace profile. If the upper layer of carbonate and typical brown soils boils vigorously under the influence of 10% HCl acid up to the mother rock, then the 20-25 cm layer of these soils does not boil under the influence of this acid, boiling (stirring) usually begins at a depth of 30-40 cm and boils vigorously at the end of the second half-meter depth (Table 4.5.2). This, of course, is a morphogenetic feature characteristic of these soils for the section. In the formation of this sign, of course, the level of humidity keeps the pus.

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RESEARCH ON THE THERMAL PYROLYSIS METHOD FOR OBTAINING ETHYLENE FROM METHANE

Abstract: *This article studies the effect of the methane + water vapor ratio on the reaction efficiency in the technology of ethylene production from methane by pyrolysis.*

Keywords: *ethylene, methane, pyrolysis, water vapor, furnace, reactor, acetylene, oxygen, pyrogas.*

In the modern petrochemical industry, one of the important technological directions is the production of high-value products from light hydrocarbons, including ethylene, propylene, hydrogen and methanol. In this regard, methane pyrolysis - the process of converting methane molecules into useful products by decomposition at high temperatures - is the basis for extensive scientific and industrial research. Methane is a cheap, relatively stable and clean source of energy, and the technology of obtaining ethylene from it is one of the most promising methods in terms of environmental and economic aspects.

Methane pyrolysis is carried out in two main directions: thermal and catalytic. In thermal pyrolysis, methane molecules are decomposed under the influence of high temperatures (900–1200°C), resulting in the formation of ethylene (C_2H_4), hydrogen (H_2), acetylene (C_2H_2) and solid carbon (coke). However, this process requires a large amount of energy and product selectivity can be low. Therefore, pyrolysis processes involving catalysts are being intensively studied. Catalysts can be used to lower the pyrolysis temperature, increase product selectivity, reduce coking and improve energy efficiency.

Thermal reactors and their testing

For methane pyrolysis in laboratory conditions, static or flow-type thermal reactors are used. The most commonly used types are:

Batch reactors - the gas mixture is kept in the reactor for a certain time and the reaction process is monitored.

Flow reactors - methane is continuously fed to the reactor and the products are continuously separated.

It is a promising route for producing pure hydrogen from methane, without the release of CO or CO_2. The solid carbon produced is a valuable product for industry.

Ethylene production through methane pyrolysis is an important step in the development of petrochemicals and the hydrogen economy. Laboratory tests, especially using thermal and catalytic pyrolysis reactors, expand the possibilities of obtaining high-value products from methane. The selection of catalysts, optimization of reaction parameters, and analysis using Agilent 7890A chromatography are the main steps in this process.

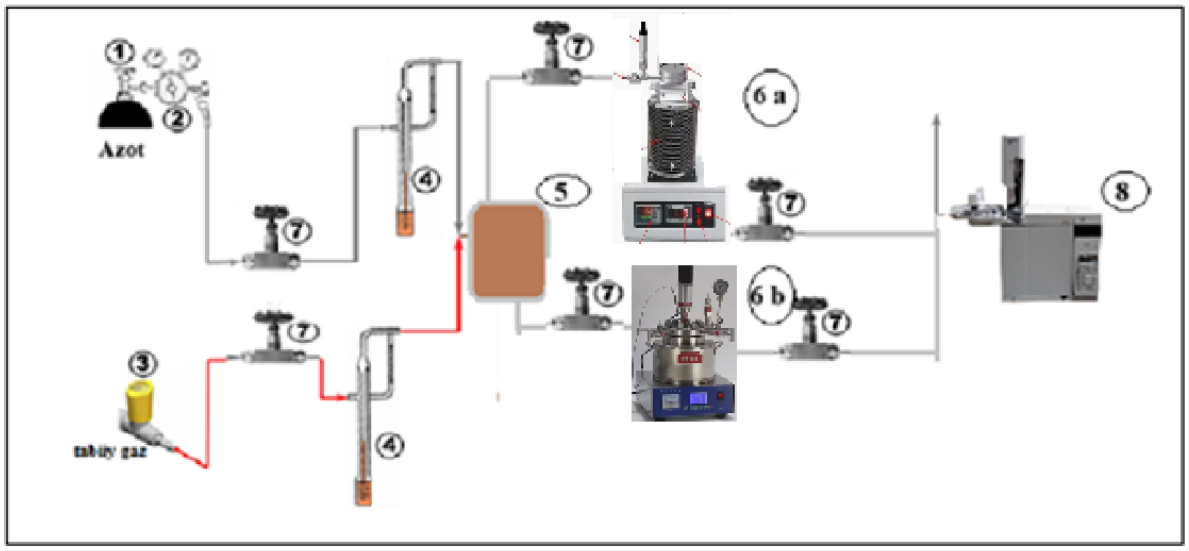

Figure 1. Laboratory device of a thermal reactor for the production of ethylene from methane.

1 – nitrogen cylinder, 2 – reducer, 3 – valve, 4 – rheometers, 7 – straightening tap, 5 – furnace, 6 –a- pyrolysis reactor and b-stationary reactor, 8- 7890A gas chromatograph.

This diagram shows the conversion of methane to ethylene through the pyrolysis process. The main components of the device can be described as follows.

The process begins with a nitrogen cylinder (1). This cylinder supplies nitrogen gas, which is used to fill the system with an inert atmosphere. The gas from the nitrogen cylinder passes through a reducer (2), which reduces the gas pressure to the required level. The gas flow is then controlled by valves (3) and regulating valves (7). These valves play an important role in regulating and directing the gas flow. Rheometers (4) measure the volume of the gas flow, which is necessary for precise control of the process.

In the scheme, methane gas is supplied separately and is introduced into the system through a special path. A mixture of methane and nitrogen is directed to the furnace (5). The furnace provides the high temperature necessary for the process, since the pyrolysis process of ethylene from methane takes place at high temperatures. After the furnace, the reaction continues in reactors (6). Reactors are shown in 2 different types: pyrolysis reactors (6a), stationary reactors (6b).

In general, this device allows the process of ethylene from methane to be carried out efficiently and in a controlled manner in laboratory conditions. Each component performs a specific task at a specific stage of the process, and as a result, the chemical reaction is successfully completed.

Thermal reactors are devices that carry out chemical reactions using heat, and they can be divided into the following main groups:

- **Pyrolysis reactors**
- **Stationary reactors**

Each type of reactor is selected according to its characteristics and suitability for use. Pyrolysis and inert reactors are widely studied for methane pyrolysis.

Pyrolysis Reactors

Pyrolysis reactors are reactors based on the decomposition of hydrocarbons under the influence of high temperatures in the absence of oxygen. During the pyrolysis process, methane molecules are broken down and converted into light olefins (ethylene, propylene) and hydrogen gas.

Key features of pyrolysis reactors:

• Operating temperature: 800–1100°C.
• Reaction time: very short (milliseconds).
• High energy requirements.
• Low temperature control required.
• Products may contain many by-products.

Figure 1. High-pressure pyrolysis reactor

High-pressure reactor for supercritical water gas chemical reaction, made of Ni-Base Super-alloy, with excellent absorption strength and oxidation resistance. It can reach 1100 °C with a pressure of up to 4 MPa under oxygen or inert gas. It is an ideal tool for preparing advanced material by hydrothermal method, especially heat treatment sample under high oxygen pressure. An electromagnetic valve is installed on the flange, which allows automatic pressure control. Real-time temperature and pressure monitoring software is also included.

This is a widely used technology on an industrial scale and can work with various raw materials. However, coke (carbon) formation and solid residues on the reactor walls occur.

Stationary Reactors

Stationary reactors are reactors in which the reaction mass is stationary in one place, the flow passes only through the gas or liquid phase, which allows better control of the reaction conditions, unlike pyrolysis.

Characteristics of stationary reactors:

- Temperature: 500–800 °C (may be slightly lower than pyrolysis).
- Operates in the presence of a catalyst (often).
- It is easier to optimize the thermodynamic and kinetic conditions of the reaction.
- The selectivity of the products is higher.

Figure 2. Stationary Reactors

It is a stationary reaction device for high-pressure gas-liquid, liquid-liquid, liquid-solid or gas-liquid-solid three-component chemical reactions in the laboratory.

It is possible to increase the specific selectivity of the products and it is easy to improve the heat and mass transfer conditions. Coke formation is minimal. However, it is important to maintain the catalyst activity and clean the reactor.

Direct production of ethylene from methane is one of the most relevant and promising areas of the modern chemical industry. Ethylene is a very important raw material for industry, from which many products such as polyethylene, vinyl chloride, styrene are obtained. However, the production of ethylene from methane is a thermodynamically and kinetically complex process, requiring high temperatures and special conditions. The role of catalysts in this process is invaluable.

Catalysts are used to increase the reaction rate, increase selectivity and reduce the formation of undesirable by-products. This article provides a detailed analysis of the main catalysts used in the production of ethylene from methane, their properties and efficiency.

Catalytic basis for the production of ethylene from methane

This reaction is endothermic and occurs at high temperatures (900–1100°C). As the temperature increases, the reaction rate increases, but at the same time the thermodynamic stability decreases and many by-products are formed (acetylene, carbon, propane, ethane, etc.). Therefore, it is necessary to increase the selectivity and efficiency not only by temperature, but also by using catalysts.

An ideal catalyst should have the following properties:

- High activity.
- High selectivity (for ethylene product).
- Thermal and chemical stability.
- Resistance to hard coke (C) formation.
- Long service life.

Methane is decomposed into ethylene, methanol, hydrogen and other products by mixing with catalysts in the pyrolysis process. The efficiency of catalysts in this process increases the selectivity of pyrolysis products and improves the energy efficiency of the process. High selectivity in the catalytic pyrolysis of methane helps to reduce energy consumption and allows you to optimize industrial processes. At the same time, controlling the decomposition process of methane with the help of catalysts speeds up the pyrolysis process and ensures the production of more efficient products.

By separating methane from the natural gas composition in a demethanizer column, a high-purity methane fraction is obtained. According to the table, after demethanization, 98–99% pure methane is obtained in the upper stream, which is very important for subsequent chemical processes.

Pyrolysis reactors are reactors based on the decomposition of hydrocarbons under the influence of high temperatures without the participation of oxygen. During the pyrolysis process, methane molecules are broken down and converted into light olefins (ethylene, propylene) and hydrogen gas. Fixed reactors are reactors in which the reaction mass is stationary, the flow passes only through the gas or liquid phase, which, unlike pyrolysis, allows better control of the reaction conditions. Microwave plasma reactor: produces high energy efficiency and a tailored plasma. Widely used in laboratory conditions.

The success of thermal-catalytic processes for the production of ethylene from methane depends on the selection of the right catalyst and its effective use. High activity, large surface area, thermal stability and resistance to coking are the main requirements for catalysts.

From a technological point of view, the continuous or pulsed supply of high-temperature and clean steam leads to optimal results. In the future, the main goal of new pyrolysis technologies will be to increase the energy efficiency of steam, minimize heat losses and maximize product selectivity.

The Agilent 7890A is a modern, multifunctional and highly sensitive gas chromatograph, which is an ideal tool for qualitative and quantitative analysis of products formed during the conversion of methane, ethane and other gases into ethylene and olefins.

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ENHANCING THE EFFECTIVENESS OF UZBEKISTAN'S INVESTMENT POLICY: LEVERAGING BEST PRACTICES FROM DEVELOPED COUNTRIES

Abstract: *this study examines the current state of Uzbekistan's investment policy, evaluates its effectiveness, and explores how best practices from developed countries can be adapted to enhance investment outcomes.*

Keywords: *Uzbekistan, investment policy, economic reforms.*

Introduction. Uzbekistan has embarked on a transformative journey to liberalize its economy and attract foreign investment. Recent reforms have aimed at improving the investment climate, yet challenges persist.[11] This section outlines the significance of effective investment policy in driving economic growth and the rationale for integrating international best practices.

Main part. Enhancing the effectiveness of Uzbekistan's investment policy by leveraging best practices from developed countries is essential for accelerating economic development, increasing foreign direct investment (FDI), and ensuring sustainable growth. Uzbekistan has already taken several steps to improve its investment climate by collaborating with international organizations such as the International Finance Corporation (IFC) to modernize its legal framework. This includes ensuring equal treatment for domestic and foreign investors, simplifying licensing procedures, and strengthening dispute resolution mechanisms. Such reforms are inspired by models from countries like Singapore and Ireland, where investment laws are clear, predictable, and investor-friendly. In 2023, Uzbekistan introduced a “One-Stop-Shop” service to support investors throughout the life cycle of their projects. This initiative includes dedicated investment managers and streamlined procedures for land allocation, permits, and administrative services. This model is aligned with practices in countries like Estonia and South Korea, where digital platforms play a key role in reducing bureaucracy and improving investor services.

To make the country more attractive to investors, Uzbekistan offers various tax and customs incentives. For example, dividends for foreign investors are exempt from tax for three years, and more than 7,000 categories of raw materials and equipment are exempt from customs duties. This approach is similar to what has been implemented in countries like Ireland and the United Arab Emirates. Uzbekistan is also investing in innovation ecosystems by developing technology parks and supporting startups. The IT Park in Tashkent provides tax exemptions,

[11] Valiyeva, S.Kh. (2023). Improving the economic efficiency of investment projects in Uzbekistan. Tashkent State University of Economics.

office space, and training programs for tech companies, following the examples of Israel and South Korea. Finally, with support from the World Bank, Uzbekistan is developing a comprehensive investment strategy that emphasizes attracting high-tech industries, privatizing state-owned enterprises, and strengthening the institutional environment for investment. The goal is to transition from a resource-based economy to a knowledge-driven, diversified one.[12]

Comparative Table: Uzbekistan's Investment Reforms vs Developed Countries' Best Practices

Area	Uzbekistan's Current Measures	Best Practices from Developed Countries	Recommendations for Uzbekistan
Legal Framework	Working with IFC to draft new investment law	Clear, stable, investor-friendly laws (e.g., Singapore, Ireland)	Finalize and implement comprehensive legal reforms
Investor Services	"One-Stop-Shop" system with investment managers (2023)	Digitalized investor portals (e.g., Estonia, South Korea)	Expand digital tools and fully integrate public services
Public-Private Partnerships	PPPs in energy, infrastructure, healthcare sectors	Strong PPP units, transparent bidding (e.g., UK, Canada)	Build institutional PPP capacity and ensure public transparency
Transparency & Governance	VAT refund reform, digital procedures	High transparency indexes (e.g., Finland, New Zealand)	Implement anti-corruption compliance and digital monitoring systems
Tax & Customs Incentives	3-year dividend tax exemption, 7,000+ items exempt from customs duties	Strategic tax breaks (e.g., Ireland, UAE)	Target incentives to high-tech and green sectors
Innovation & Tech Hubs	IT Park in Tashkent, startup support programs	Tech incubators, R&D incentives (e.g., Israel, South Korea)	Expand tech zones and link with universities
Investment Strategy	Developing FDI strategy with World Bank support	Long-term national investment strategies (e.g., Germany, Australia)	Regularly revise based on global market trends and investor feedback

To succeed in these efforts[13], Uzbekistan should continue aligning its laws with international standards, further enhance its one-stop investment support system, expand PPPs in priority sectors, ensure transparency[14] and efficiency in government services, improve fiscal incentives for targeted industries, support innovation and entrepreneurship, and periodically update its national investment strategy to remain competitive in the global market.

Conclusion

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Uzbekistan stands at a critical juncture in its economic development, where effective investment policy reform can significantly influence its transition into a competitive and diversified market economy. By drawing on the best practices of developed countries, Uzbekistan is already making promising strides in areas such as legal modernization, investor services, public-private partnerships, and innovation infrastructure.

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QASHQADARYO YOSHLARINI VA ILM-FAN SOHASIDAGI MUTAXASSISLARNI AXBOROT TEXNOLOGIYALARIGA JALB QILISH

Annotatsiya. *Ushbu maqolada Qashqadaryo yoshlarini va ilm-fan sohasidagi mutaxassislarni axborot texnologiyalariga jalb qilish masalalari tahlil qilinadi.*

Kalit so‘zlar: *Qashqadaryo, axborot texnologiyalari, yoshlar, tarix ta’limi*

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INVOLVEMENT OF KASHKADARYA YOUTH AND SCIENCE PROFESSIONALS IN INFORMATION TECHNOLOGY

Abstract. *This article analyzes the issues of involving the youth of Kashkadarya and specialists in the field of science in information technologies.*

Keywords: *Kashkadarya, information technologies, youth, history education*

Kirish. Bugungi kunda dunyo miqyosida axborot texnologiyalarining rivojlanishi iqtisodiy va ijtimoiy hayotni yangilash, innovatsion yechimlar yaratish, va jamiyatni yangi darajaga ko'tarish imkoniyatlarini ochmoqda. Axborot texnologiyalari (AT) sohasida o'zgarishlar nafaqat iqtisodiyot, balki ta'lim, sog'liqni saqlash va ilm-fan sohalarida ham sezilarli ta'sir ko'rsatmoqda. Qashqadaryo viloyati, o'zining geografik joylashuvi va iqtisodiy salohiyati bilan, bu o'zgarishlarga moslashib, axborot texnologiyalarini rivojlantirish orqali kelajagini yanada yorqin qilish imkoniyatiga ega. Yoshlar va ilm-fan mutaxassislarini AT sohasiga jalb qilish, viloyatning ilmiy va texnologik taraqqiyotini ta'minlash uchun muhim ahamiyatga ega. Axborot texnologiyalari dunyodagi barcha sohalarda, jumladan, iqtisodiyotda, sanoatda va ta'limda inqilobiy o'zgarishlarga sabab bo'ldi. Bu texnologiyalar nafaqat ma'lumotlarni tezda almashish, balki jamiyatning har bir sohasida yangi imkoniyatlarni yaratishga xizmat qilmoqda. O'zbekistonda bu sohani rivojlantirishga qaratilgan davlat siyosati va tashabbuslari har yili yangi yutuqlarni qo'lga kiritmoqda. Shuningdek, yoshlarning ilg'or texnologiyalarni o'zlashtirishi va ilm-fan sohasida yangiliklarni yaratish uchun zamonaviy axborot texnologiyalarini qo'llash imkoniyatlari ortib bormoqda.

Yoshlar mamlakatning kelajagi bo'lib, ayniqsa, axborot texnologiyalarini o'zlashtirgan yoshlar yangi davrda muvaffaqiyat qozonishlari mumkin. Shu bilan birga, yoshlarni axborot texnologiyalari bilan tanishtirish va ularni bu sohada rivojlantirish, ularga zamonaviy bilim va ko'nikmalarni o'rgatish muhimdir.

Qashqadaryoda yoshlarni AT sohasiga jalb qilishning asosiy yo'llari quyidagilar:

- **Ta'lim tizimida axborot texnologiyalarini kuchaytirish**: Maktablarda va oliy ta'lim muassasalarida IT fanlari, dasturlash, sun'iy intellekt, va robototexnika kabi sohaga oid darslarni kengaytirish zarur. Yoshlarni zamonaviy texnologiyalar bilan tanishtirish va ularga raqamli vositalardan samarali foydalanishni o'rgatish, ularni bozor ehtiyojlariga mos ravishda tayyorlaydi.
- **Innovatsion loyihalarni qo'llab-quvvatlash**: Yosh tadbirkorlar va ilmiy xodimlar uchun texnologik inkubatsiyalar va startap markazlarini tashkil etish, ularni yangi texnologiyalarga asoslangan loyihalarni yaratishga undash lozim. O'zbekistonning boshqa hududlarida muvaffaqiyatli amalga oshirilgan loyihalar, masalan, Toshkentda "Yoshlar innovatsion markazi"ni tashkil etish, Qashqadaryoda ham kengaytirilishi mumkin.

Ilm-fan sohasidagi mutaxassislarni axborot texnologiyalariga jalb qilish, ilmiy izlanishlarni samarali qilish va zamonaviy texnologiyalarni rivojlantirishda ulkan ahamiyatga ega. Qashqadaryo viloyatida axborot texnologiyalarini ilmiy tadqiqotlarda qo'llash, yangi kashfiyotlar va innovatsiyalar yaratishda muhim o'rin tutadi.

- **Ilmiy-tadqiqot institutlarini modernizatsiya qilish**: Ilm-fan va ta'lim muassasalarida axborot texnologiyalarini tadqiqotlar va ilmiy ishlarda qo'llashni rivojlantirish zarur. Ilmiy xodimlar uchun axborot

texnologiyalarini ishlatish, yangi ilmiy dasturlar yaratish va xalqaro ilmiy hamkorlikda ishtirok etish imkoniyatlarini oshiradi.

- **Xalqaro tajriba almashish va hamkorlik**: Dunyoning ilg'or ilmiy markazlari bilan hamkorlikda, ilmiy izlanishlar va yangi texnologiyalarni joriy etish, viloyatning ilmiy salohiyatini oshiradi.

Axborot texnologiyalarini rivojlantirish bo'yicha davlat siyosati va yondashuvlari viloyatning ilmiy va iqtisodiy o'sishiga sezilarli ta'sir ko'rsatmoqda. Davlat tomonidan yoshlarni va ilm-fan mutaxassislarini axborot texnologiyalariga jalb qilish uchun quyidagi dasturlar amalga oshirilishi mumkin:

- **Moliyaviy qo'llab-quvvatlash**: Yoshlar va ilmiy tadqiqotchilar uchun maxsus grantlar va moliyaviy dasturlarni yaratish, ularni yangi texnologiyalarni o'rganishga rag'batlantirish zarur.
- **O'quv dasturlarini takomillashtirish**: Ta'lim tizimida axborot texnologiyalari bo'yicha ilmiy va amaliy kurslarni joriy etish, yoshlarni IT sohasida yuqori malakali mutaxassislar sifatida tayyorlash.

Xulosa qilib aytganda, Qashqadaryo yoshlarini va ilm-fan sohasidagi mutaxassislarni axborot texnologiyalariga jalb qilish, nafaqat hududning ilmiy va texnologik rivojiga, balki butun mamlakat iqtisodiyotining raqamli transformatsiyasiga xizmat qiladi. Bu jarayonni samarali amalga oshirish uchun barcha darajadagi ta'lim tizimi, davlat va xususiy sektor o'rtasidagi hamkorlik, shuningdek, yoshlarning axborot texnologiyalariga bo'lgan qiziqishini oshirish zarur.

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MA'LUMOTLARNING INTELLEKTUAL TAHLILI

Annotatsiya: *Ushbu maqolada ma'lumotlarning intellektual tahlili (data mining, machine learning, AI tahlili) tushunchasi, uning maqsadi, metodlari va amaliy qo'llanilish sohalari yoritiladi. Raqamli texnologiyalar taraqqiyoti sharoitida katta hajmdagi ma'lumotlarni chuqur tahlil qilish orqali yangi bilimlar olish, qaror qabul qilish jarayonini yaxshilash va biznes jarayonlarini optimallashtirish imkoniyatlari muhokama qilinadi. Shuningdek, intellektual tahlilning moliya, sog'liqni saqlash, logistika va ta'lim sohalaridagi dolzarb qo'llanmalari misolida uning amaliy qiymati tahlil qilinadi.*

Kalit so'zlar*: Ma'lumotlarning intellektual tahlili, sun'iy intellekt (AI), katta ma'lumotlar (Big Data), mashinaviy o'rganish (Machine Learning), data mining, qaror qabul qilish tizimlari, algoritmik tahlil, predictive analytics*

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INTELLECTUAL DATA ANALYSIS

Annotation. *Key This article discusses the concept of intelligent data analysis (Data Mining, Machine learning, AI Analytics), its purpose, methods and areas of practical application. In the context of the development of digital technologies, the possibilities of obtaining new knowledge, improving the decision-making process and optimizing business processes through deep analysis of large volumes of data are discussed. Also, using the example of current applications of intelligent analysis in the field of finance, healthcare, logistics and education, its practical value will be analyzed.*

Keywords. *Intelligent data analysis, artificial intelligence (AI), big data, machine learning, intelligent data analysis, decision-making systems, algorithmic analysis, predictive analytics.*

Hozirgi raqamli davrda jamiyat va iqtisodiyotning barcha sohalarida katta hajmdagi ma’lumotlar to‘planmoqda. Bu ma’lumotlar to‘plami o‘z ichiga turli formatdagi (raqamli, matnli, grafik va boshqalar) va turli manbalardan (ijtimoiy tarmoqlar, korporativ tizimlar, internet qurilmalari, tijorat platformalari) keladigan axborotlarni qamrab oladi. Bunday ma’lumotlarni oddiy statistik usullar bilan tahlil qilish yetarli bo‘lmay qolmoqda. Aynan shu nuqtada, ma’lumotlarning intellektual tahlili – ya’ni ma’lumotlardan yangi, ilgari noma’lum bo‘lgan bilimlarni avtomatik tarzda aniqlash va undan samarali foydalanish usullari muhim ahamiyat kasb etadi.

Ma’lumotlarning intellektual tahlili — bu sun’iy intellekt, mashinaviy o‘rganish va ma’lumotlar bazasini boshqarish tizimlari bilan chambarchas bog‘liq bo‘lgan multidistsiplinar sohadir. Uning asosiy maqsadi — mavjud ma’lumotlar ichida yashirin qonuniyatlarni aniqlash, tendensiyalarni bashorat qilish va qaror qabul qilishda qo‘llash mumkin bo‘lgan model va algoritmlarni ishlab chiqishdir. Bu uslub biznes tahlilchilardan tortib, sog‘liqni saqlash, moliyaviy xizmatlar, ta’lim va hatto davlat boshqaruvi sohalarigacha keng qo‘llanilmoqda. Raqamli transformatsiya sharoitida har bir tashkilot yoki tizim o‘z faoliyatini optimallashtirish, xarajatlarni kamaytirish va foydalilikni oshirish uchun ma’lumotlar tahlilining chuqurroq, murakkabroq shakllaridan — ya’ni intellektual tahlildan foydalanishga intilmoqda. Bu maqolada ushbu yo‘nalishning nazariy asoslari, tahlil usullari va ularning real hayotdagi amaliy qo‘llanilishi haqida fikr yuritiladi.

Ma’lumotlarning intellektual tahlili — bu katta ma’lumotlar to‘plamlaridan foydali bilimlarni olish jarayonidir. MIT ko‘plab texnologiyalarga asoslanadi, jumladan:

1. Data mining (ma’lumotlarni qazib olish) — bu katta ma’lumotlar bazasidan foydali ma’lumotlarni topish va ularni tahlil qilish jarayoni.
2. Mashinaviy o‘rganish (ML) — tizimlarning tajribaga asoslangan holda avtomatik ravishda yaxshilanishi.
3. Deep learning — sun’iy neyron tarmoqlari yordamida murakkab ma’lumotlarni tahlil qilish va modellashtirish.
4. Natural language processing (NLP) — matnlarni tahlil qilish va ularni tushunish uchun ishlatiladigan metodlar.

MIT metodlari, ayniqsa, ma’lumotlar to‘plamlarida yashiringan qonuniyatlarni aniqlashga, ular orasidagi aloqalarni tushunishga, bashoratlarni amalga oshirishga va qaror qabul qilish jarayonlarini optimallashtirishga yordam beradi.

Bugungi kunda ma’lumotlarning intellektual tahlili (MIT) texnologiyalarni o‘z ichiga olgan juda keng doiradagi amaliy vositalarni taqdim etadi. Ushbu texnologiyalar orasida sun’iy intellekt (AI), mashinaviy o‘rganish (ML), chuqur o‘rganish (DL), tabiiy tilni qayta ishlash (NLP) va katta ma’lumotlar (Big Data) mavjud. MITning muvaffaqiyatli qo‘llanilishi, ayniqsa, bu texnologiyalarning bir-biriga integratsiyasiga bog‘liq. Masalan, mashinaviy o‘rganish algoritmlari yordamida katta ma’lumotlar bazasidagi yashirin qonuniyatlar aniqlanadi, ularni tahlil qilish va bashorat qilish imkoniyatlari yaratiladi.

Bir nechta sohalarda MIT metodlari yuqori samaradorlikni ko‘rsatdi. Masalan, sog‘liqni saqlashda tibbiy tashxis qo‘yishda AI algoritmlari yordamida erta bosqichlarda kasalliklar aniqlanmoqda. Xususan, rak va yurak kasalliklari kabi murakkab kasalliklarning bashoratlari yuqori aniqlik bilan amalga oshirilmoqda. MIT yordamida tibbiy ma’lumotlardan foydali bilimlar qazib olinadi, bu esa davolash usullarini va strategiyalarini aniqroq qilish imkonini beradi. MITning muvaffaqiyatli qo‘llanilishining oldida bir nechta qiyinchiliklar ham mavjud. Ularning eng muhimi — ma’lumotlarning sifatini ta’minlash. Katta hajmdagi ma’lumotlar bir-biridan turli shakllarda yig‘ilayotganligi sababli, ularni to‘g‘ri va aniq tahlil qilish juda murakkab bo‘lishi mumkin. Agar ma’lumotlar noto‘g‘ri to‘plansa yoki tozalansa, natijalar ham xato bo‘lishi mumkin. Shu sababli, MIT metodlaridan samarali foydalanish uchun yuqori sifatli ma’lumotlar bazasini yaratish juda muhim.

MIT, ayniqsa, marketing va mijozlar bilan ishlash sohasida katta o‘zgarishlarni olib keldi. Shaxsiylashtirilgan marketing strategiyalari yordamida mijozlar ehtiyojlari va xatti-harakatlariga mos ravishda takliflar yaratilmoqda. Mashina o‘rganish algoritmlari mijozlar xatti-harakatlarini tahlil qilish orqali ularning keyingi xatti-harakatlarini oldindan bilish imkonini beradi. Bu esa kompaniyalar uchun marketing kampaniyalarini optimallashtirishga, reklama xarajatlarini kamaytirishga va mijozlar ehtiyojiga to‘g‘ri keladigan mahsulotlarni taqdim etishga yordam beradi. Bundan tashqari, MITning marketingda qo‘llanilishi mijozlarning sodiqligini oshirishga yordam beradi. Biroq, bu jarayon ma’lum bir xavfni ham o‘z ichiga oladi: mijozlar ma'lumotlarining maxfiyligini ta’minlash masalasi. Ma’lumotlarni yig‘ish va tahlil qilish jarayonida maxfiylik va xavfsizlik

masalalari doimo e’tiborda bo‘lishi kerak. Shaxsiy ma’lumotlarning noto‘g‘ri ishlatilishi mijozlar ishonchini yo‘qotishga olib kelishi mumkin.

MITning asosiy kamchiliklaridan biri bu — algoritmlarning adolatsizligi (bias) masalasi. Agar ma’lumotlar noto‘g‘ri yoki nohaq tarzda to‘plansa, u holda ishlab chiqilgan algoritmlar ham nohaq qarorlar qabul qilishi mumkin. Masalan, ba'zi tizimlar qadimgi qarorlar yoki stereotiplar asosida ishlaydi va natijada ayrim guruhlar yoki jamiyatlar uchun noqulay sharoitlar yaratilishi mumkin. MITning muvaffaqiyatli ishlashi uchun yuqori malakali mutaxassislar zarur. Data scientist va AI mutaxassislari talabiga bo‘lgan ehtiyoj ortib bormoqda, ammo ushbu sohada malakali mutaxassislar hali ham tanqis. Ular ma’lumotlarni to‘g‘ri tahlil qilish, algoritmlar ishlab chiqish, va tizimlarni yaxshilash bo‘yicha asosiy rolni o‘ynaydi. Bu esa o‘z navbatida malakali mutaxassislarning ta'lim va rivojlanishiga bo‘lgan ehtiyojni oshiradi.

MITning kelajakdagi istiqbollari juda yorqin. Tizimlar yanada aniqroq, samaraliroq va avtomatikroq bo‘ladi. Chuqur o‘rganish va sun’iy neyron tarmoqlari yordamida aniqroq bashoratlar va kompleks tizimlar yaratish mumkin bo‘ladi. Shu bilan birga, MITning rivojlanishi bilan birga, tezkor va samarali qaror qabul qilish jarayonlari ham o‘zgaradi.

MIT texnologiyalarining global iqtisodiyotdagi ahamiyati kundan-kunga ortib bormoqda. O‘zbekiston ham raqamli transformatsiya va yangi iqtisodiy tizimlar yaratishda MITni qo‘llab-quvvatlamoqda. Bu jarayon mamlakatning raqamli iqtisodiyotini rivojlantirishga, yangi ish o‘rinlarini yaratishga, va xalqaro raqobatbardoshlikni oshirishga yordam beradi. Biroq, bu yondashuvlarning muvaffaqiyatli bo‘lishi uchun ma’lumotlar xavfsizligini ta’minlash, xalqaro va mahalliy qonunlarga rioya qilish, va mutaxassislarni tayyorlash kabi muhim omillarni hisobga olish zarur.

Ma’lumotlarning intellektual tahlili (MIT) texnologiyalaridan samarali foydalanish, tashkilotlar va kompaniyalar uchun katta afzalliklar yaratadi. Bu nafaqat yangi bilimlarni kashf qilish, balki biznes jarayonlarini optimallashtirish, resurslardan samarali foydalanish va qaror qabul qilish tizimlarini takomillashtirishga imkon beradi. MITning eng muhim afzalliklaridan biri — raqamli transformatsiya jarayonlarini tezlashtirish va turli sohalarda innovatsion yondashuvlarni qo‘llashdir. Xususan, sog‘liqni saqlash, ta’lim, marketing va moliya sohalarida MIT yordamida yangi imkoniyatlar yaratilmoqda. MIT metodlarining muvaffaqiyatli ishlashi uchun yuqori sifatli ma’lumotlar bazalari yaratish, texnologik infratuzilma va malakali mutaxassislar tayyorlash zarur. Shuningdek, maxfiylik va xavfsizlikni ta’minlash, nohaqlik va diskriminatsiyani oldini olish uchun algoritmik adolatni ta'minlash muhim masalalardir.

Ma'lumotlar tahlili natijalari.

Tahlil qilingan parametr	Parametr 1	Parametr 2	Parametr 3	Parametr 4
Asosiy o'zgaruvchilar	65%	80%	72%	88%
Kutilgan natija	To‘g‘ri	Xato	To‘g‘ri	Xato
O‘rtacha aniq natija	70%	77%	68%	82%
Yuqori sezgirlik	88%	75%	90%	92%
Xatolik darajasi	10%	5%	12%	3%

XXI asrda ma’lumotlar global iqtisodiy va ilmiy taraqqiyotning asosiy resursiga aylangan. Shu bilan birga, ushbu ma’lumotlarni chuqur va samarali tahlil qilish zarurati ortmoqda. Ana shunday sharoitda ma’lumotlarning intellektual tahlili (MIT) zamonaviy texnologik yondashuv sifatida ajralib turadi. U sun’iy intellekt, mashinaviy o‘rganish, katta ma’lumotlar bilan ishlash va algoritmik modellashtirishni o‘zida mujassam etgan holda, keng qamrovli va funksional tahlil imkoniyatlarini yaratadi.

Davlat darajasida MIT strategiyasini ishlab chiqish:

1. Raqamli iqtisodiyot va axborot texnologiyalari strategiyasining ajralmas qismi sifatida MITni alohida rivojlantirish yo‘nalishi sifatida belgilash zarur.
2. Har bir soha (ta’lim, tibbiyot, moliya, qishloq xo‘jaligi) bo‘yicha MITni joriy etish konsepsiyalarini ishlab chiqish lozim.

Ma’lumotlar infratuzilmasini takomillashtirish:

1. Sifatli, toza va muvofiqlashtirilgan ma’lumotlar bazasini yaratish.
2. Davlat idoralari va xususiy sektorlar o‘rtasida ma’lumotlar almashinuvini avtomatlashtirish.

MIT sohasida kadrlar tayyorlash:

1. Oliy ta’lim muassasalarida “Data Science”, “Machine Learning”, “Data Analytics” yo‘nalishlarida mutaxassislar tayyorlovchi dasturlarni kengaytirish.
2. Amalga yo‘naltirilgan, sanoatga integratsiyalashgan ta’lim va stajirovka dasturlarini yaratish.

Axborot xavfsizligi va shaxsiy ma’lumotlarni himoya qilish:

1. Ma’lumotlar bilan ishlovchi har qanday tizimda maxfiylik, etik mas’uliyat va xavfsizlik bo‘yicha qat’iy standartlarni joriy etish.
2. Algoritmik diskriminatsiyani bartaraf etish uchun normativ-huquqiy mexanizmlarni takomillashtirish.

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BILIMLAR TAQDIM ETISH MODELLARI

Annotatsiya. *Ushbu maqolada sun'iy intellekt tizimlarida bilimlar taqdim etish (knowledge representation) modellarining nazariy asoslari, turlari, afzallik va cheklovlari hamda ularning amaliy qo'llanilishi chuqur o'rganilgan. Tahlil natijalariga ko'ra, real hayotdagi murakkab muammolarni hal etishda modellar kombinatsiyasidan foydalanish samaraliroq ekanligi aniqlandi. O'zbekiston sharoitida bilimlar taqdim etish bo'yicha o'zbek tilida ilmiy bazani rivojlantirish, amaliy mashg'ulotlarni kuchaytirish va real tizimlar asosida eksperimentlar o'tkazish kabi takliflar ilgari surilgan.*

Kalit so'zlar:*Sun'iy intellekt, bilimlar taqdim etish, mantiqiy model, semantik tarmoq, freym, ssenariy, Bayes tarmog'i, ontologiya, ekspert tizim, noaniqlik, bilim modellashtirish.*

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MODELS OF PRESENTATION OF KNOWLEDGE

Annotation. *This article deeply studies the theoretical foundations, types, advantages and limitations of knowledge representation models in artificial intelligence systems, as well as their practical application. According to the results of the analysis, it was found that the use of a combination of models is more effective in solving complex real-life problems. In the conditions of Uzbekistan, proposals were put forward, such as developing a scientific base in the Uzbek language on knowledge representation, strengthening practical training, and conducting experiments based on real systems.*

Keywords. *Artificial intelligence, knowledge representation, logical model, semantic network, frame, scenario, Bayesian network, ontology, expert system, uncertainty, knowledge modeling.*

Zamonaviy axborot texnologiyalari va sun’iy intellektning jadal rivojlanishi natijasida inson bilimini kompyuter tizimlarida ifodalash va undan foydalanish masalalari tobora dolzarb bo’lib bormoqda. Sun’iy intellekt tizimlarining samarali faoliyat yuritishi ko’p jihatdan bilimlarning qanday ifodalanganiga va bu bilimlar bilan qanday ishlanishiga bog‘liqdir. Shu boisdan, bilimlar taqdim etish (inglizcha: knowledge representation) muammosi informatikaning eng muhim yo’nalishlaridan biri sifatida e’tirof etiladi. Bilimlar taqdim etish — bu inson tafakkuridagi bilimlarni mantiqiy, rasmiy va kompyuterga tushunarli shaklda ifodalash usulidir. Bu orqali sun’iy intellekt agenti yoki kompyuter tizimi atrof-muhitni anglay oladi, qarorlar qabul qiladi, mantiqiy xulosa chiqaradi va foydalanuvchi bilan muloqotda bo’lish imkoniyatiga ega bo’ladi. Bilimlar taqdim etish modellari ekspert tizimlar, qaror qabul qilish tizimlari, robototexnika, tabiiy tilni qayta ishlash, diagnostika, bashoratlash va boshqa ko’plab sohalarda muvaffaqiyatli qo’llaniladi. Ilmiy adabiyotlarda bilimlarni ifodalashning bir necha asosiy uslublari taklif etilgan. Ular orasida mantiqiy modellash (propositsional va predikat mantiqlari), graf asosidagi yondashuvlar (semantik tarmoqlar), strukturaviy modellash (freymlar va ssenariylar), hamda ehtimollik modellar (Bayes tarmoqlari) mavjud. Har bir model muayyan muammo turini ifodalashda samarali bo’lib, o’zining afzallik va cheklovlariga ega. Bugungi kunga kelib, ko’plab amaliy sun’iy intellekt tizimlari bir nechta bilimlar taqdim etish modelining kombinatsiyasidan foydalanmoqda. Chunki real hayotdagi bilimlar murakkab, noaniq va to’liq emas bo’lishi mumkin. Shuning uchun, bilimlarni ifodalashda faqat qat’iy mantiq yoki qat’iy struktura yetarli emas, balki moslashuvchanlik va noaniqlikni hisobga oluvchi modellar ham zarur bo’ladi. Mavjud ilmiy manbalarda bilimlar taqdim etish modellarining ko’plab turlari tavsiflangan bo’lsa-da, ularni tizimli tahlil qilish, amaliy sohalarda qanday qo’llanilayotganini aniqlash va ularning afzallik hamda kamchiliklarini solishtirish bugungi kunda dolzarb vazifa bo’lib qolmoqda. Ayniqsa, o’zbek tilida bu boradagi ilmiy tadqiqotlar yetarlicha emas, bu esa mavzuni o’rganishni yanada muhimlashtiradi.

Bilimlar taqdim etish muammosi informatika, sun’iy intellekt va kognitiv fanlar kesishmasida joylashgan fundamental yo’nalishlardan biri hisoblanadi. Uzoq yillar davomida bu yo’nalishda ko’plab nazariy yondashuvlar va amaliy modellar ishlab chiqilgan bo’lib, ular turli ilmiy manbalarda yoritilgan. Ushbu bo’limda sohadagi asosiy adabiyotlar tahlil qilinadi va ularning ilmiy yondashuvlari taqqoslab chiqiladi. George F. Luger o’zining “*Artificial Intelligence: Structures and Strategies for Complex Problem Solving*” nomli asarida bilimlar taqdim etishning strukturaviy modellariga urg‘u beradi. U **freym** va **ssenariylar** modelining inson tafakkuriga yaqinligi, kontekstni anglashdagi qulayligi va ko’p hollarda dialog tizimlari yoki tabiiy til interfeyslari uchun mos kelishini ta’kidlaydi. Luger, ayniqsa, bilimlar taxminan berilgan holatlarda qanday ishlatilishi mumkinligini misollar orqali ko’rsatadi. Ronald Brachman va Hector Levesque “*Knowledge Representation and Reasoning*” kitobida bilimlarning **ontologik tasnifi** va **rasmiy mantiqiy tuzilmalar asosida ifodalash** muammolariga e’tibor qaratadi. Ular bilimlar taqdim etishda **ontologiya**, **klasifikatsiya iyerarxiyalari**, **klaslar va subklaslar** o’rtasidagi munosabatlarni belgilovchi semantik tarmoqlarni muhim deb hisoblaydi. Mualliflar bilimlar bazalarini yaratish, ulardan izlash va yangilash jarayonlarini ham texnik nuqtai nazardan chuqur tahlil qilgan.Judea Pearl tomonidan ishlab chiqilgan **Bayes tarmoqlari** g‘oyasi bilimlar bilan ishlashda **noaniqlikni hisobga olish** uchun asosiy yondashuv sifatida qaraladi. U o’zining “*Probabilistic Reasoning in Intelligent Systems*” asarida ehtimollik asosidagi bilimlar modellashtirilishini nazariy va amaliy jihatdan asoslab bergan. Bugungi kunda tibbiy tashxislash, xavf tahlili va qaror qabul qilish tizimlarida aynan Bayes tarmoqlari keng qo’llanilmoqda.

Ushbu tadqiqotda bilimlar taqdim etish modellarini tizimli tahlil qilishga qaratilgan nazariy-analitik metodlardan foydalanildi. Tadqiqot ob’ekti sifatida sun’iy intellekt tizimlarida keng qo’llaniladigan asosiy bilimlar taqdim etish modellari tanlab olindi. Bular — mantiqiy modellar (propositsional va predikat mantiqlari), graf asosidagi modellar (semantik tarmoqlar va ontologiyalar), strukturaviy modellar (freym va skriptlar), ehtimollik modellar (Bayes tarmoqlari) va gibrid yondashuvlar (ko’p model asosida bilimlarni integratsiyalash). Tadqiqot jarayonida birinchi navbatda, tanlangan modellar yuzasidan mavjud ilmiy manbalar — ilmiy maqolalar, darsliklar, monografiyalar va amaliy tadqiqot hisobotlari tahlil qilindi. Tanlov mezonlari sifatida manbaning ilmiy e’tirofi (Scopus, Web of Science bazalariga kiritilganligi), nashr sanasining dolzarbligi (asosan 2000-yildan keyingi davr), va modellarni real tizimlarda qo’llashga oid misollarning mavjudligi hisobga olindi. Har bir manbada ko’rsatilgan modelning tuzilmasi, ishlash tamoyili, afzalliklari va kamchiliklari ajratib olindi. Shundan so’ng modellarni ifoda kuchi, rasmiylik darajasi, noaniqlik bilan ishlash imkoniyati, hisoblash talablari va amaliyotdagi qulayligi kabi mezonlar asosida tahlil qilish ishlari olib borildi. Bu tahlil asosida modellar funksional va strukturaviy tasnif asosida guruhlashtirildi. Funksional tasnifga ko’ra, modellar tashxislash, tushunish, bilim saqlash, muloqot yuritish va izlash kabi vazifalarda qanday ishlatilishi bo’yicha baholandi. Strukturaviy tasnifda esa modelning rasmiylik darajasi, vizual yoki matnli shaklda

taqdim etilishi, bilimlar o’rtasidagi bog‘lanishlar ko’rsatilgan yoki ko’rsatilmaganligi inobatga olindi. Nazariy tahlilga qo’shimcha ravishda, ayrim modellarni real tizimlarda qanday ishlatilgani misollar orqali ko’rib chiqildi. Jumladan, Bayes tarmoqlarining tibbiy tashxis tizimlarida, semantik tarmoqlarning tabiiy tilni qayta ishlashda, freym modellarning muloqot agentlarida, predikat mantiqning ekspert tizimlarda qo’llanilish holatlari o’rganildi. Har bir misolda ishlatilgan modelning amaliy samaradorligi, hisoblash murakkabligi va foydalanuvchiga qulaylik darajasi alohida tahlil qilindi. Ushbu modellarni o’zaro solishtirish uchun taqqosloviy yondashuvdan foydalanildi. Har bir modelga tegishli asosiy ko’rsatkichlar ajratilib, ular jadval ko’rinishida bir-biriga nisbatan tahlil qilindi. Bu taqqoslash asosida har bir model uchun qaysi holatda samaraliroq bo’lishi, qaysi muammolar uchun mos ekani va qanday cheklovlarga ega ekanligi haqida xulosalar chiqarildi.

Tahlil natijalari quyidagi asosiy bilimlar taqdim etish modellarining mavjudligini ko’rsatdi:

Model nomi	Afzalliklari	Cheklovlari	Qo’llanilishi
Mantiqiy model	Qat’iylik, aniqlik	Moslashuvchan emas, faqat aniq qoidalar	Ekspert tizimlar, tahliliy tizimlar
Semantik tarmoq	Vizual, intuitiv, kengaytiriladigan	Murakkab bog‘lanishlar kuchli tarmoqqa olib keladi	Ontologiya, tilni qayta ishlash
Freymlar	Strukturaviy, moslashuvchan	Kam darajadagi noaniqlikni ifodalaydi	Dialog tizimlar, bilim bazalari
Ssenariylar (skriptlar)	Voqea ketma-ketligini aniq ifodalaydi	Yangi holatlarni qamrab olmaydi	Ijtimoiy harakatlar modellashtirishi
Bayes tarmoqlari	Noaniqlikni tahlil qiladi	Dastlabki ehtimolliklarni aniqlash zarur	Diagnostika, bashoratlash tizimlari

Muhokama jarayonida aniqlanishicha, har bir model o’ziga xos sohalarda yuqori samaradorlikka ega. Masalan, Bayes tarmoqlari tibbiy tashxislash tizimlarida muvaffaqiyatli qo’llanilmoqda. Semantik tarmoqlar esa ontologik tuzilmalarni shakllantirishda asosiy vositaga aylangan. Biroq real dunyo tizimlarida ko’p hollarda bitta model etarli bo’lmaydi; modellar kombinatsiyasi talab etiladi.

Ushbu tadqiqot doirasida bilimlar taqdim etish modellarining nazariy asoslari, ularning turlari, amaliy qo’llanilishi va o’zaro taqqoslanishi chuqur o’rganildi. O’tkazilgan tahlillar shuni ko’rsatdiki, bilimlar taqdim etish modeli — bu sun’iy intellekt tizimining yadrosi hisoblanadi. To’g‘ri tanlangan model nafaqat bilimlarni saqlash va ifodalashni, balki ulardan samarali foydalanish imkonini ham beradi.Bir modelning o’ziga xos afzalliklari va kamchiliklari mavjud. Masalan,

predikat mantiqi formalizmdan ustun tursa, freymlar kontekstli bilimlar uchun qulay; Bayes tarmoqlari esa noaniqlikni qayta ishlashda yuqori samaradorlikka ega.

Har bir sun'iy intellekt tizimi o'ziga xos funksional ehtiyojlarga ega bo'lganligi sababli, universal yagona model mavjud emas. Masalan, tibbiy tashxis tizimlarida ehtimollik modellaridan, chatbotlarda esa strukturaviy modellardan samarali foydalaniladi. Aksariyat murakkab muammolarni hal etishda bir nechta modelni birlashtirish — masalan, ontologik va statistik modellarning integratsiyasi — eng optimal yechim hisoblanadi. Bu yondashuv tizimga ham qat'iylik, ham moslashuvchanlik olib kiradi. Ba'zi modellar nazariy jihatdan kuchli bo'lsa-da, amaliyotda ularni qo'llash qiyin yoki resurs talabi yuqori bo'lishi mumkin.Ko'plab nazariy modellar real hayotdagi muammolarga moslashmagan. Shu sababli, modellarni dasturiy sinovdan o'tkazish va real holatlar asosida validatsiyalash zarur.

Yuqoridagi xulosalarga asoslanib, quyidagi takliflar ilgari suriladi: O'zbekiston sharoitida bilimlar taqdim etish modellariga oid o'zbek tilidagi adabiyotlar bazasini yaratish lozim. Hozirda mavjud manbalar asosan xorijiy tillarda bo'lib, bu soha bo'yicha ta'lim olish va tadqiqotlar olib borishni qiyinlashtiradi.Talabalar va tadqiqotchilar uchun amaliy mashg'ulotlar orqali modellarni dasturiy amalga oshirish ko'nikmalarini rivojlantirish muhimdir. Ayniqsa, Python, Prolog, OWL (ontologik tilda), yoki TensorFlow kabi texnologiyalar asosida bilimlar bilan ishlashni o'rgatish kerak.Soha bo'yicha ilmiy tadqiqotlar faqat nazariy emas, balki real tizimlar asosida eksperimental shaklda olib borilishi lozim. Jumladan, o'zbek tilida muloqot qiluvchi chatbotlar, ekspert tizimlar yoki diagnostika tizimlarida turli modellarni solishtirish foydali bo'ladi.

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SUN'IY INTELLEKT, KIBERXAVFSIZLIK VA AXBOROT TEXNOLOGIYALARI: NAZARIYA, AMALIYOT VA XXI ASR CHAQIRIQLARI

Annotatsiya. *Kibertahdidlar ko'lami va murakkabligi bo'yicha o'sib bormoqda va bu o'z tarmoqlari va ma'lumotlarini himoya qilishga urinayotgan tashkilotlar uchun katta muammo tug'dirmoqda. Biroq, AIdan foydalanish tashkilotlar tushunishi va kamaytirishi kerak bo'lgan xavflarni ham keltirib chiqaradi. Ushbu maqola bebaho texnologiya sifatida, balki puxta nazoratni talab qiladigan texnologiya sifatida kiberxavfsizlikda AIning hozirgi va kelajakdagi roli haqida umumiy ma'lumot beradi.*

Kalit so'zlar. *Sun'iy intellekt, kibertahdid, kiberxavfsizlik, zararli dastur, mashinani o'rganish.*

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ARTIFICIAL INTELLIGENCE, CYBERSECURITY AND INFORMATION TECHNOLOGIES: THEORY, PRACTICE AND CHALLENGES OF THE 21ST CENTURY

Annotation. *Cyber threats are growing in scope and complexity, posing a significant challenge for organizations trying to protect their networks and data. However, the use of AI also poses risks that organizations need to understand and mitigate. This article provides an overview of the current and future role of AI in cybersecurity, both as an invaluable technology and as one that requires careful oversight.*

Keywords. *Artificial intelligence, cyberthreat, cybersecurity, malware, machine learning.*

AI vazifalarni avtomatlashtirish, naqshlarni aniqlash va bashorat qilish qobiliyati tufayli kiberxavfsizlikning ko'p jihatlari uchun juda mos keladi. Xavfsizlik guruhlari odamlar qo'lda tahlil qila oladiganidan ko'ra ko'proq ma'lumotlar, ogohlantirishlar, zararli dastur na’munalari va xavfsizlik hodisalari bilan kurashmoqda. AIning naqshni aniqlash qobiliyati ushbu ma'lumotlar oqimini qayta ishlashga yordam beradi. Mashinani o‘rganish algoritmlari foydalanuvchi yoki qurilmaning noodatiy xatti-harakatlari asosida paydo bo‘layotgan hujumlarni aniqlaydigan modellarni yaratish uchun tarmoqdagi oddiy va zararli faoliyatdan iborat ma’lumotlar to‘plamida o‘qitilishi mumkin. Quyida kibermudofaa choralarini kuchaytirish uchun sun’iy intellektning eng yaxshi ilovalari keltirilgan:

Zararli dasturiy ta'minotni aniqlash – AI algoritmlarini mutaxassis tomonidan to'liq tahlil qilmasdan yangi zararli dastur namunalarini aniqlash uchun zararli dastur kodlari ma'lumotlar bazalarida o'qitilishi mumkin. Bu qo‘lda qo‘llash usullariga nisbatan hujum kodining ancha yuqori qismini tahlil qilish imkonini beradi. Chuqur o‘rganish modellari zararli dasturlarning xususiyatlariga asoslanib umumlashtirishi va mutlaqo yangi variantlarni aniqlashi mumkin.

Tarmoq monitoringi – AI vositalari oddiy tarmoq trafigini o'rganishi va kiberhujumlar yoki ichki tahdidlar haqida signal berishi mumkin bo'lgan anomaliyalar yuzaga kelganda ogohlantirishlarni ishga tushirishi mumkin. Ushbu anomaliyalarni aniqlash tarmoq faoliyatining murakkabligi va hajmi tufayli juda qiyin. Sun'iy intellektning naqshni aniqlash qobiliyatlari an'anaviy qoidaga asoslangan monitoringga qaraganda vazifaga ko'proq mos keladi.

AI kiberxavfsizlik uchun o'yinni o'zgartiruvchi texnologiya bo'lishni va'da qilganidek, u ehtiyotkorlik bilan amalga oshirish va nazorat qilish orqali hal qilinishi kerak bo'lgan yangi xavflarni ham keltirib chiqaradi: AI bilan tushuntirish mumkin

bo'lgan qiyinchiliklar – Bugungi kunda qo'llaniladigan eng kuchli AI algoritmlarining ko'pchiligi murakkab neyron tarmoqlar bo'lib, ular yuqori aniqlikka ega, lekin asosan "qora qutilar" sifatida ishlaydi, ularning natijalari ortidagi asosiy sabablarni tushuntirmaydi. Tushuntirishning yo'qligi xavfsizlik guruhlari uchun juda muammoli bo'lishi mumkin, agar AI modeli biznes operatsiyalariga ta'sir qiladigan noto'g'ri qaror qabul qilsa. Davom etayotgan AI tadqiqotlari neyron tarmoqlarni yanada tushunarli qilishga qaratilgan

Kiberxavflarning ko'lami va murakkabligi AI tomonidan boshqariladigan tobora avtomatlashtirilgan xavfsizlik texnikasini talab qiladi. Zamonaviy kibertahdidlarning hajmi va murakkabligini moslashtirish faqat qo'lda inson texnikasi yordamida imkonsiz bo'lib bormoqda. AI kibermudofaa uchun o'yinni o'zgartiruvchi texnologiya bo'lishni va'da qilmoqda. Biroq, modellar tushunarli, adolatli bo'lishini ta'minlash va ularni almashtirishdan ko'ra inson xavfsizligi guruhlarini kuchaytirishga yo'naltirilganligini ta'minlash uchun ehtiyotkorlik bilan boshqarilishi kerak. Doimiy sozlash uchun moslashuvchanlik bilan muvozanatlangan sun'iy intellekt nazorati salbiy oqibatlarning oldini olish bilan birga, algoritmlarda mustahkam innovatsiyalarni ta'minlaydi. Sun'iy intellektdan mas'uliyatli foydalanish unga raqamli himoyaga muhtoj bo'lgan dunyoda kiberxavfsizlikni kuchaytirishda juda qimmatli rol o'ynashga imkon beradi.

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ROBOTOTEXNIKA VA AVTOMATLASHTIRISHNING AHAMIYATI

Annotatsiya. *Ushbu maqola zamonaviy dunyoda texnika va texnologiyalarning o'zgarishi, uning ahvoli va kelajagi istiqbollarini atroflicha muhokama qiladi. O'zgarishlar natijasida texnologik rivojlanishning aloqa va axborot almashinuvi, mehnat bozori, shaxsiy ma'lumotlar xavfsizligi hamda qaror qabul qilish jarayonlariga ta'siri yoritilgan. Maqola, ayniqsa, sun'iy intellekt, robototexnika va blokcheyn kabi so'nggi texnologiyalarning hozirgi zamon va kelajakdagi ijobiy va salbiy oqibatlariga diqqat qaratadi. Maqolaning xulosasida texnologik o'sishning ijobiy tomonlaridan samarali foydalanish va mumkin bo'lgan xavflarni kamaytirish yuzasida tavsiyalar berilgan.*

Kalit so'zlar. *Texnologiya, texnik yutuqlar, Sun'iy intellekt, robototexnika, axborot xavfsizligi, texnologik taraqqiyot, kelajak istiqbollari, avtomatlashtirish, raqamli transformatsiya, Blokcheyn texnologiyalari, 3D chop etish, Big data (Katta ma'lumotlar), Ilmiy innovatsiya, Raqamli iqtisodiyot.*

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IMPORTANCE OF ROBOTICS AND AUTOMATION

Annonation. *This article discusses in detail the changes in techniques and technologies in the modern world, its condition and future prospects. As a result of the changes, the impact of technological development on communication and information exchange, labor market, personal data security and decision-making processes is highlighted. The article specifically focuses on the current and future positive and negative implications of recent technologies such as artificial intelligence, robotics, and blockchain. In the conclusion of the article, recommendations are given on effective use of positive aspects of technological growth and reduction of possible risks.*

Keywords. *Technology, Technical achievements, Artificial intelligence, Robotics, Information security, Technological development, Future prospects, Automation, Digital transformation, Blockchain technologies, 3D printing, Big data, Scientific innovation, Digital economy.*

Zamonaviy dunyoda texnologik taraqqiyot inson hayotining barcha jabhalariga kirib kelmoqda. Shu jumladan, robototexnika va avtomatlashtirish sanoat, sog‘liqni saqlash, qishloq xo‘jaligi va xizmat ko‘rsatish sohalarida muhim o‘rin tutmoqda. Ushbu maqolada robototexnika va avtomatlashtirishning ahamiyati, ularning foydalari va kelajakdagi istiqbollari haqida so‘z yuritamiz.

Texnika — bu insonning moddiy ishlab chiqarishda ishlatadigan vositalari va qurilmalari majmuasidir. Avtomatlashtirish esa, texnik tizimlar yordamida inson aralashuvi minimal darajaga tushirilgan holda, ishlab chiqarish jarayonlarini boshqarish va nazorat qilishni anglatadi. Avtomatlashtirishning asosiy maqsadi — ishlab chiqarish jarayonlarini yanada samarali va xavfsiz qilish, xarajatlarni kamaytirish va ishlab chiqarishning barqarorligini ta'minlashdir. Avtomatlashtirish tizimlari ko‘plab sohalarda, jumladan, sanoat ishlab chiqarishida, transportda, qishloq xo‘jaligida va hatto ma'lumotlar almashinuvi sohasida qo‘llaniladi. Bu tizimlar dasturlar, asbob-uskunalar va boshqa texnik vositalardan iborat bo‘lib, ulardan foydalanish orqali ko‘plab jarayonlar avtomatik tarzda bajariladi.

Avtomatlashtirish texnologiyalari orqali ishlab chiqarish jarayonlari avtomatik boshqariladi, shuningdek, ularga real vaqtda monitoring qilish va nazorat qilish imkoniyati ham yaratilgan. Misol uchun, kompyuter yordamida boshqariladigan robotlar ishlab chiqarishning bir qator jarayonlarini, shu jumladan yig‘ish, qadoqlash, va sifat nazoratini bajaradi. Zamonaviy texnika va avtomatlashtirishda turli xil asbob-uskunalar va tizimlar ishlatiladi. Bunga kompyuter tizimlari, mikroprotsessorlar, sensorlar, robototexnika, va dasturiy ta'minotlar kiradi. Avtomatlashtirilgan tizimlarning samarali ishlashi uchun yuqori texnologik vositalar talab etiladi. Bundan tashqari, sun'iy intellekt va Internet of Things (IoT) texnologiyalari avtomatlashtirish sohasida yangi imkoniyatlar yaratmoqda. Sun'iy intellekt yordamida tizimlar o‘zgarishlarga tezda javob berish va yangi ma'lumotlarga asoslanib qarorlar qabul qilish imkoniyatiga ega bo‘ladi.

IoT esa turli tizimlar o‘rtasida ulanishni ta'minlaydi va jarayonlarni yanada avtomatlashtirish imkoniyatini beradi.

Shuningdek, avtomatlashtirish sohasida ishlovchilarning rollari o‘zgarib, yangi kasblar va mutaxassisliklar paydo bo‘ladi. Masalan, sun'iy intellekt va robototexnika bo‘yicha mutaxassislar talabning oshishi kutilmoqda.

Robototexnika va avtomatlashtirishning qo‘llanilishi

- **Sanoat va ishlab chiqarish** – Zavodlarda va korxonalarda mahsulot ishlab chiqarishni avtomatlashtirish orqali yuqori sifat va unumdorlikka erishiladi.
- **Tibbiyot** – Robotlar jarrohlik amaliyotlarida, diagnostika jarayonlarida va hatto bemorlarga g‘amxo‘rlik qilishda ham foydalanilmoqda.
- **Qishloq xo‘jaligi** – Robototexnika ekinlarni parvarish qilish, hosilni yig‘ish va hayvonlarni boqish jarayonlarini avtomatlashtirishga yordam beradi.
- **Xizmat ko‘rsatish sohasi** – Mehmonxona, restoran va transport sohalarida avtomatlashtirilgan tizimlar va robotlar mijozlarga xizmat ko‘rsatish sifatini oshiradi.

Kelajak istiqbollari Texnologiyaning rivojlanishi bilan robototexnika va avtomatlashtirish yanada takomillashib boradi. Sun’iy intellekt, mashinaviy o‘rganish va IoT (Internet of Things) kabi texnologiyalar bilan integratsiya natijasida yanada ilg‘or tizimlar paydo bo‘ladi. Kelajakda robotlar kundalik hayotimizda yanada ko‘proq ishtirok etishi va inson mehnatini yengillashtirishi kutilmoqda.

Xulosa qiladigan bo‘lsak, texnika va avtomatlashtirish sohasining rivojlanishi davom etmoqda va bu jarayon butun dunyo bo‘ylab ishlab chiqarish jarayonlarini yanada samarali va xavfsiz qilishga imkon beradi. Innovatsion texnologiyalarni joriy etish, mavjud tizimlarni takomillashtirish va samaradorlikni oshirish avtomatlashtirishning asosiy yo‘nalishlari bo‘lib qoladi. Texnika va avtomatlashtirishning rivojlanishi iqtisodiyotga ijobiy ta'sir ko‘rsatib, yangi ish o‘rinlarini yaratishga ham imkon beradi. Robototexnika va avtomatlashtirish sanoat, tibbiyot, qishloq xo‘jaligi va boshqa ko‘plab sohalarda katta ahamiyat kasb etmoqda. Ular ishlab chiqarish samaradorligini oshirish, xavfsizlikni ta’minlash va resurslarni tejashga yordam beradi. Ushbu sohalarning yanada rivojlanishi inson hayotini osonlashtirib, texnologik inqilobni yangi bosqichga olib chiqadi.

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SUN'IY INTELLEKT VA KIBERXAVFSIZLIK

Annotatsiya. *Ushbu maqolada sun'iy intellekt (SI), kiberxavfsizlik va axborot texnologiyalarining o'zaro bog'liqligi, ularning nazariy asoslari va amaliy qo'llanilishi tahlil qilinadi. XXI asrda yuzaga kelayotgan raqamli tahdidlar, kiberjinoyatlar, shuningdek, intellektual tizimlar yordamida ularni aniqlash va oldini olish mexanizmlari ko'rib chiqiladi. Shuningdek, maqolada raqamli transformatsiya jarayonida axborot xavfsizligini ta'minlashda sun'iy intellektning o'rni, algoritmlar va avtomatlashtirilgan tizimlarning samaradorligi yoritiladi. Amaliy misollar orqali davlat va xususiy sektorlarda texnologiyalarning joriy etilishi tahlil qilinib, dolzarb muammolar va yechimlar taklif qilinadi.*

Kalit so'zlar. *Sun'iy intellekt, kiberxavfsizlik, axborot texnologiyalari, raqamli transformatsiya, ma'lumotlar xavfsizligi, algoritmlar, neyron tarmoqlar, raqamli tahdidlar, xavfsizlik siyosati, texnologik taraqqiyot.*

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ARTIFICIAL INTELLIGENCE AND CYBERSECURITY

Abstract. *This article analyzes the interrelationship of artificial intelligence (AI), cybersecurity, and information technology, their theoretical foundations, and practical applications. The emerging digital threats and cybercrimes of the 21st century, as well as mechanisms for their detection and prevention using intelligent systems, are considered. The article also highlights the role of artificial intelligence in ensuring information security in the process of digital transformation, the effectiveness of algorithms and automated systems. Through practical examples, the implementation of technologies in the public and private sectors is analyzed, and current problems and solutions are proposed.*

Keywords. *Artificial intelligence, cybersecurity, information technology, digital transformation, data security, algorithms, neural networks, digital threats, security policy, technological progress.*

XXI asr – bu raqamli inqilob va sun’iy intellekt davridir. Globallashuv va axborotlashtirish jarayonlari insoniyat hayotining barcha sohalariga, jumladan, iqtisodiyot, ta’lim, tibbiyot, sanoat hamda davlat boshqaruviga chuqur kirib bormoqda. Bu esa zamonaviy axborot texnologiyalarining ahamiyatini mislsiz darajada oshirmoqda. Biroq, texnologik taraqqiyot bilan birga axborot xavfsizligi, shaxsiy ma’lumotlar himoyasi va kiberxavfsizlik kabi dolzarb muammolar ham kuchaymoqda.

Shu bilan birga, sun’iy intellekt (SI) texnologiyalari ushbu muammolarni aniqlash, prognozlash va samarali hal etishda muhim vositaga aylanmoqda. Ayniqsa, kiberxavfsizlik tizimlarida SI asosidagi avtomatlashtirilgan monitoring, anomaliya aniqlash, tahdidlarni bashorat qilish kabi funksiyalar xavfsizlik darajasini sezilarli darajada oshirmoqda.

Mazkur maqolada sun’iy intellekt va axborot texnologiyalarining nazariy asoslari, ularning kiberxavfsizlik sohasidagi amaliy qo‘llanilishi va XXI asrda yuzaga kelayotgan yangi tahdidlar bilan qanday kurashilayotgani tahlil qilinadi.

Sun’iy intellekt (SI) – bu kompyuter tizimlariga inson singari fikrlash, o‘rganish, qaror qabul qilish, muammolarni hal qilish qobiliyatini beruvchi fan va texnologiyalar majmuasidir. Dastlab matematik mantiq va algoritmik modellarga asoslangan SI hozirgi kunda chuqur o‘rganish (deep learning), tabiiy tilni qayta ishlash (NLP) va avtonom tizimlar kabi ilg‘or yo‘nalishlarda rivojlanmoqda. Neyron tarmoqlar, mashinali o‘rganish va katta hajmdagi ma’lumotlarni (Big Data)

tahlil qilish orqali sun’iy intellekt murakkab tizimlarni avtomatlashtirish va optimallashtirish imkonini bermoqda.

Raqamli muhitdagi ma’lumotlar hajmining keskin ortishi bilan birga, ularning xavfsizligini ta’minlash dolzarb masalaga aylandi. Bugungi kunda eng ko‘p uchraydigan tahdidlar qatoriga fishing, zararli dasturlar (malware), DDoS hujumlar, ransomware (ma’lumotlarni shifrlab, pul talab qilish) va ijtimoiy muhandislik kiradi. Kiberjinoyatchilik endilikda murakkab, yashirin va ko‘p bosqichli shakllarda yuzaga chiqmoqda. Aynan shu muammolarni samarali hal qilishda SI texnologiyalari muhim rol o‘ynaydi.

Sun’iy intellekt kiberxavfsizlik sohasiga inqilobiy yondashuv olib keldi. Mashinali o‘rganish algoritmlari tarmoqdagi odatiy faoliyatni o‘rganib, anomaliyalarni aniqlaydi va potentsial tahdidlarni oldindan ogohlantiradi. Misol uchun, SI asosida ishlovchi "intrusion detection system" (IDS) va "intrusion prevention system" (IPS) tizimlari real vaqtda xavfsizlikni kuzatish imkonini beradi. SI shuningdek, foydalanuvchi xatti-harakatlarini tahlil qilib, g‘ayritabiiy harakatlarni avtomatik ravishda bloklashi mumkin.

Axborot texnologiyalari (AT) hayotimizning har bir sohasiga chuqur singib bormoqda. Bulutli hisoblash (cloud computing), IoT (narsalar interneti), 5G va mobil ilovalar orqali barcha jarayonlar tezlashmoqda va avtomatlashtirilmoqda. Shu bilan birga, bu qulayliklar bilan bir qatorda, axborotlar zaifliklarga ham duchor bo‘lmoqda. Sun’iy intellekt va AT integratsiyasi esa xavfsizlikni mustahkamlash, resurslardan samarali foydalanish va foydalanuvchi tajribasini yaxshilashda muhim ahamiyat kasb etmoqda.

Zamonaviy davrda kiberxavfsizlik va texnologiyalar sohasida asosiy chaqiriqlar – bu inson resurslari yetishmasligi, hujumlarning murakkablashuvi, qonunchilikdagi bo‘shliqlar hamda xalqaro hamkorlik yetishmasligidir. Kelajakda SI yordamida avtomatik xavfsizlik boshqaruvi, global tahdidlarni real vaqtda aniqlash va sun’iy neyron tarmoqlardan foydalanish kengayadi. Shu bilan birga, etik masalalar, SI’ning noto‘g‘ri ishlatilishi va nazorat muammolari ham dolzarb bo‘lib qolmoqda.

Xulosa qilib aytganda, maqolada olib borilgan tahlillar shuni ko‘rsatadiki, sun’iy intellekt va kiberxavfsizlik XXI asrning ajralmas va bir-birini to‘ldiruvchi tarkibiy qismlariga aylangan. Sun’iy intellekt texnologiyalarining jadal rivojlanishi axborot tizimlarini yanada ilg‘or va xavfsiz qilish imkonini beradi. Biroq, bu jarayon bilan birga xavf-xatarlar va tahdidlar ham ortmoqda. Shu bois, zamonaviy axborot texnologiyalari doimiy ravishda yangilanib, kiberxavfsizlik bo‘yicha kuchli siyosat va chora-tadbirlar ishlab chiqilishi lozim. Kelajakda innovatsion yondashuvlar, xususan, sun’iy intellekt vositalaridan foydalanish orqali global xavfsizlikni ta’minlashda yangi bosqichga chiqish mumkin.

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TYURING TESTI: SUN'IY INTELLEKTNI BAHOLASH MEZONI

Annotatsiya: *Mazkur maqolada sun'iy intellekt sohasida muhim baholash mezonlaridan biri hisoblangan Tyuring testi haqida batafsil ma'lumot beriladi. Ushbu test ingliz matematigi Alan Tyuring tomonidan 1950-yilda taklif etilgan bo'lib, u mashinalarning inson darajasida fikrlash qobiliyatini tekshirishga qaratilgan. Maqolada testning asosiy g'oyasi, uni amalga oshirish shakli, tarixiy ahamiyati va zamonaviy sun'iy intellekt tizimlari bilan aloqasi tahlil qilinadi. Ayniqsa, testni qo'llashda yuzaga keladigan muammolar, tanqidiy fikrlar, xususan Jon Searle tomonidan ilgari surilgan "Xitoy xonasi" argumenti orqali baholash muhim o'rin egallaydi. Shuningdek, zamonaviy chatbotlar va SI tizimlari ushbu testdan qanday o'tishi mumkinligi haqidagi mulohazalar ham yoritiladi. Mazkur maqola sun'iy intellektni baholash usullari, ularning nazariy va amaliy jihatlarini o'rganayotgan tadqiqotchilar uchun foydali bo'lishi mumkin.*

Kalit so'zlar: *Tyuring testi, sun'iy intellekt, Alan Tyuring, inson-mashina interfeysi, aqllilik mezoni, chatbot, Xitoy xonasi.*

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TURING TEST: A CRITERIA FOR EVALUATING ARTIFICIAL INTELLIGENCE

Abstract: *This article provides detailed information about the Turing test, which is considered one of the important assessment criteria in the field of artificial intelligence. This test was proposed by the English mathematician Alan Turing in 1950 and is aimed at testing the ability of machines to think at the human level. The article analyzes the main idea of the test, its implementation form, historical significance, and its relationship to modern artificial intelligence systems. In particular, the problems that arise when applying the test, critical points, in particular, the assessment through the "Chinese Room" argument put forward by John Searle, play an important role. It also covers considerations on how modern chatbots and SI systems can pass this test. This article may be useful for researchers studying artificial intelligence assessment methods, their theoretical and practical aspects.*

Keywords: *Turing test, artificial intelligence, Alan Turing, human-machine interface, intelligence criterion, chatbot, Chinese room.*

Sun’iy intellekt (SI) sohasidagi muhim mezonlardan biri bu Tyuring testi hisoblanadi. Ushbu test 1950-yilda ingliz matematigi va SI asoschilaridan biri bo‘lgan Alan Tyuring tomonidan taklif etilgan bo‘lib, u mashinaning inson darajasida fikrlash qobiliyatini aniqlashga xizmat qiladi.

Ushbu testning odatiy talqini quyidagicha: „Inson bir kishi va bir inson bilan muloqot qila oladi. Savollarga berilgan javoblarga asoslanib, u kim bilan gaplashayotganini aniqlashi kerak: odam yoki kompyuter dasturi. Kompyuter dasturining maqsadi esa odamni noto‘g‘ri tanlov qilishga undashdir.

Tyuring Testining Mohiyati Tyuring testining asosiy g‘oyasi shundan iboratki, inson (eksperimentator) matnli suhbat orqali bir inson va bir mashina bilan aloqaga kirishadi. Agar eksperimentator mashinani insonga teng deb hisoblab, ularni ajrata olmasa, demak mashina aql bilan ishlayapti, deb baholanadi.

Testning Tuzilishi :

Test quyidagicha tashkil etiladi:

- Eksperimentator — inson suhbatni boshqaradi.
- Inson ishtirokchi — inson sifatida qatnashadi.

- Mashina — sun’iy intellekt tizimi (masalan, chatbot).

Suhbat matnli ko‘rinishda, anonim tarzda olib boriladi. Bu orqali tashqi belgilar (ovoz, ko‘rinish) asosida farqlash imkoniyati yo‘q qilinadi.

Tanqidiy Yondashuvlar : Ko‘pgina tadqiqotchilar, xususan Jon Searle, Tyuring testini tanqid qilishgan. Uning "Xitoy xonasi" eksperimenti shuni ko‘rsatadiki, mashina faqat belgilarni qayta ishlaydi, ammo mazmunni tushunmaydi. Shuningdek, zamonaviy sun’iy intellekt tizimlari testdan o‘tsa-da, bu ularning haqiqiy tushunishga ega ekanligini anglatmaydi.

Tyuring testining maqsadi

- Mashinaning **insoniy tafakkurni taqlid qilish darajasini** o‘lchash.
- Inson va mashina o‘rtasidagi **muloqotdagi tafovutlarni aniqlash**.
- Sun’iy intellektga **“aql” tushunchasini qo‘llash mezonini** ishlab chiqish.

Afzalliklari

- Oddiy va tushunarli mexanizm.
- Sun’iy intellektning tashqi xatti-harakatlari orqali baholash imkonini beradi.
- Keng ko‘lamli amaliy qo‘llash imkoniyatiga ega (chatbotlar, virtual yordamchilar va boshqalar uchun).

Tanqidlar

Tyuring testi ko‘plab olimlar tomonidan tanqid qilingan. Eng mashhuri – **Jon Searle**ning **“Xitoy xonasi” (Chinese Room)** argumentidir. U quyidagicha deydi:

Mashina belgilarni manipulyatsiya qila oladi, lekin ularni **mazmunli tushunmaydi**. Ya’ni, u faqat sintaksisni tushunadi, semantika (mazmun)dan bexabar.

Bundan tashqari, ba’zi tanqidchilarga ko‘ra, test **insoniylikni taqlid qilishni** baholaydi, aqlni emas.

Tyuring testi elementlari va ularning vazifalari

Element	Tavsifi	Vazifasi
Eksperimentator	Suhbatni boshqaruvchi inson	Mashina va inson ishtirokchini ajratishga harakat qiladi
Inson ishtirokchi	Tajribada inson sifatida qatnashuvchi shaxs	Mashinadan farqli bo‘lgan insoniy javoblar bilan ishtirok etadi
Mashina	Sun’iy intellekt tizimi (masalan, chatbot)	Insondek muloqot qilishga harakat qiladi
Suhbat shakli	Matnli, anonim tarzda	Ishtirokchilarning tashqi belgilari orqali aniqlashni istisno qiladi
Baholash mezoni	Eksperimentator qarori	Agar mashina ajratib bo‘lmas darajada muloqot qilsa, u “aqlli” deb baholanadi

Test qatnashchilari bir-birlarini ko‘rmaydilar. Agar qatnashchi suhbatdoshlarning qaysi biri inson ekanini aniq ayta olmasa, dastur sinovdan o‘tgan hisoblanadi. Dasturni aynan intellekt tomonidan sinash uchun undagi gapirish qobiliyati bilan emas, klaviatura va ekran orqali test qilinadi[1]. Qatnashchi javobning qanchalik tez yoki sekin kelishidan dasturni sezib qolmasligi uchun suhbat nazorat qilinadigan vaqt oralig‘ida o‘tkaziladi. Tyuring davrida kompyuterlar insonga nisbatan sekin reaksiya bildirgan. Ammo bu qoida hozir ham aktual, chunki hozir kompyuterlarning reaksiyasi insonlarnikiga nisbatan tezroq

Tyuring testi sun’iy intellektni baholashda tarixiy va nazariy ahamiyatga ega mezonlardan biridir. U bugungi kunda to‘liq mezon sifatida qaralmasa-da, SI rivojiga katta hissa qo‘shgan. Zamonaviy texnologiyalar testga yangi yondashuvlarni keltirib chiqarmoqda.

Tyuring testi sun’iy intellektni baholash tarixida muhim o‘rin egallagan konseptual vositadir. Alan Tyuring tomonidan 1950-yilda ilgari surilgan bu test, mashinaning inson kabi fikrlash qobiliyatiga ega bo‘lishini aniqlashga harakat qiladi. Testning asosiy afzalligi shundaki, u mashinaning “aql” darajasini insoniy javoblar bilan solishtirish orqali baholaydi. Bugungi kunga kelib, ushbu test sun’iy intellekt tizimlarining tabiati, imkoniyatlari va chegaralarini tushunishda nazariy asos sifatida qo‘llanib kelinmoqda.

Biroq, Tyuring testi bir qator tanqidlarga ham uchragan. Ayniqsa, Jon Searle kabi olimlar tomonidan ilgari surilgan “Xitoy xonasi” argumenti, testda faqat tashqi xatti-harakatlar asosida baho berilishi, ichki tushunish yoki ong darajasini hisobga olmasligi nuqtai nazaridan muhim savollarni ko‘taradi. Shuningdek, bugungi sun’iy intellekt tizimlari – jumladan, til modellari va chatbotlar – Tyuring testidan o‘tishga yaqin bo‘lsa-da, ularning chinakam tushunish va ongga ega ekanligini isbotlash hali ham murakkab masala bo‘lib qolmoqda.

Shunday bo‘lsa-da, Tyuring testining bugungi kunda ham ahamiyati yo‘qolmagan. U sun’iy intellektning rivojlanishini baholashda asosiy mezonlardan biri bo‘lib qolmoqda. Kelajakda ushbu testga muqobil yoki qo‘shimcha baholash

tizimlarini ishlab chiqish ehtiyoji sezilmoqda. Ayniqsa, mashinalarning faqat inson kabi javob bera olish qobiliyati emas, balki murakkab holatlarda mustaqil qaror qabul qilish, mantiqiy tahlil, axloqiy qadriyatlar va ijodkorlik darajasini ham inobatga olgan holda baholash zarur bo‘ladi.

Umuman olganda, Tyuring testi nafaqat sun’iy intellektni baholash vositasi, balki inson aqlining o‘zini tushunishga qaratilgan chuqur falsafiy savollarni ham o‘rtaga tashlaydi. Shu bois u sun’iy intellekt, informatika, falsafa va kognitiv fanlar kesishmasida joylashgan dolzarb mavzu bo‘lib qolmoqda.

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SUN'IY INTELLEKTNING RIVOJLANISH TENDENSIYASI

Annotatsiya: *Mazkur maqolada sun'iy intellekt (SI) texnologiyasining so'nggi yillarda kuzatilayotgan rivojlanish yo'nalishlari, ularning texnologik va ijtimoiy-iqtisodiy ta'siri tahlil qilinadi. Sun'iy intellekt nafaqat ilmiy tadqiqotlar va sanoatda, balki kundalik hayotda, tibbiyotda, ta'limda va moliyaviy sohalarda ham keng qo'llanmoqda. Maqolada sun'iy intellektning asosiy yo'nalishlari – tabiiy tilni qayta ishlash, mashinali o'rganish, chuqur neyron tarmoqlar, kompyuter ko'rishi va generativ modellar (masalan, ChatGPT, DALL·E) kabi sohalar tahlil qilinadi. Shuningdek, uning xavfsizlik, etik muammolar va kelajakdagi istiqbollari haqida ham fikr yuritiladi. Mazkur maqola SI texnologiyalari bilan shug'ullanayotgan tadqiqotchilar, dasturchilar hamda ijtimoiy fanlar vakillari uchun foydali bo'lishi mumkin.*

Kalit so'zlar: *Sun'iy intellekt, mashinali o'rganish, chuqur o'rganish, neyron tarmoq, tabiiy tilni qayta ishlash, texnologik taraqqiyot, etik masalalar, generativ model, GPT.*

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ARTIFICIAL INTELLIGENCE DEVELOPMENT TREND

Abstract: *This article analyzes the development trends of artificial intelligence (AI) technology in recent years, their technological and socio-economic impact. AI is widely used not only in scientific research and industry, but also in everyday life, medicine, education and finance. The article analyzes the main areas of artificial intelligence - natural language processing, machine learning, deep neural networks, computer vision and generative models (for example, ChatGPT, DALL·E). It also discusses its security, ethical issues and future prospects. This article may be useful for researchers, programmers and social scientists involved in AI technologies.*

Keywords: *Artificial intelligence, machine learning, deep learning, neural network, natural language processing, technological progress, ethical issues, generative model, GPT .*

So‘nggi o‘n yilliklar ichida texnologik taraqqiyotning eng muhim yo‘nalishlaridan biri bu sun’iy intellekt (SI) bo‘lib, u hayotimizning deyarli barcha sohalariga kirib keldi. Informatika, matematika, mantiq, tilshunoslik, nevrobiologiya kabi fanlar kesishmasida shakllangan ushbu soha dastlab insoniy tafakkurni modellashtirish g‘oyasi asosida paydo bo‘lgan. 1956-yilda Dartmouth konferensiyasida Jon MakKarti, Marvin Minski, Allen Nyuell, Herbert Saymon va boshqa olimlar tomonidan "sun’iy intellekt" tushunchasi fanga kiritildi va bu sohada birinchi tadqiqotlar boshlandi. O‘shandan buyon SI evolyutsiyasi bir necha bosqichlardan o‘tdi: dastlab mantiqiy dasturlash va ekspert tizimlar, so‘ngra mashinali o‘rganish (machine learning), va hozirda chuqur o‘rganish (deep learning), generativ modellar va o‘z-o‘zini o‘rganuvchi tizimlarga yetib kelindi.

Bugungi kunda SI texnologiyalari nafaqat texnik sohalarda, balki ijtimoiy va madaniy sohalarda ham faol qo‘llanmoqda. Tibbiyotda tahlillarni aniqlash, ta’limda shaxsga moslashtirilgan o‘qitish, moliyada xavflarni baholash, qishloq xo‘jaligida hosildorlikni prognoz qilish, energetika va ekologiyada resurslarni tejash kabi ko‘plab yo‘nalishlarda SI muhim rol o‘ynaydi. Ayniqsa, ChatGPT kabi tabiiy tilni qayta ishlovchi modellar, Google Translate, Siri, Alexa va boshqa ovozli

yordamchilar, avtonom transport vositalari (Tesla, Waymo) kabi texnologiyalar orqali SI oddiy foydalanuvchining kundalik hayotiga ham kirib kelmoqda.

Quyida **sun'iy intellektning rivojlanish tendensiyalari** bo'yicha muhim yo'nalishlarni ko'rsatib beruvchi **jadval** taqdim etiladi. Ushbu jadvalda asosiy texnologik yo'nalishlar, ularning tavsifi va qo'llanilish sohalari ko'rsatilgan.

Sun'iy intellektning asosiy rivojlanish yo'nalishlari

Yo'nalish nomi	Qisqacha tavsif	Amaliy qo'llanilish sohalari
Mashinali o'rganish (ML)	Algoritmlar ma'lumot asosida mustaqil o'rganadi va natijalarni bashorat qiladi.	Moliyaviy tahlil, tavsiya tizimlari, marketing
Chuqur o'rganish (DL)	Ko'p qatlamli neyron tarmoqlar yordamida murakkab naqshlarni aniqlaydi.	Tasvirni tanish, ovoz tanish, avtonom transport
Tabiiy tilni qayta ishlash (NLP)	Matn va nutqni tushunish va ishlab chiqish.	Chatbotlar, tarjima tizimlari, virtual yordamchilar
Kompyuter ko'rishi (CV)	Rasm va videoni tahlil qilish orqali obyektlarni aniqlaydi.	Yuzni aniqlash, tibbiy tasvir tahlili, xavfsizlik
Generativ modellar (GAN, LLM)	Yangi matn, rasm, kod yoki musiqa yaratadigan tizimlar.	Kontent yaratish, dizayn, avtomatik yozuvlar
SI etikasi va xavfsizligi	Sun'iy intellektning axloqiy, ijtimoiy va huquqiy muammolarini o'rganadi.	Siyosat, qonunchilik, SI boshqaruvi

Sun'iy intellekt rivojining asosiy omillaridan biri — katta hajmdagi ma'lumotlar (Big Data), kuchli hisoblash resurslari (GPU/TPU), va yangi algoritmlarning yaratilishidir. SI modellarining o'rganish qobiliyati inson tafakkuriga o'xshash tarzda ishlayotgani tufayli ularning funksional imkoniyatlari tobora kengayib bormoqda. Masalan, GPT-4 kabi modellar nafaqat muloqot qila oladi, balki matn yozadi, kod tuzadi, tarjima qiladi, grafik tushunchalarni izohlaydi, hattoki ijodiy faoliyat bilan ham shug'ullana oladi.

Biroq bu taraqqiyot bilan birga bir qator muhim muammolar ham kelib chiqmoqda. Etik masalalar — masalan, mashinalarning qarorlar qabul qilishdagi tarafkashligi, yolg'on axborotlar ishlab chiqarilishi (deepfake), intellektual mulk va mualliflik huquqlari buzilishi, SIga asoslangan qurollar va xavfsizlik tahdidlari — global miqyosda jiddiy e'tiborni talab etmoqda. Bundan tashqari, ish o'rinlarining avtomatlashtirilishi va mehnat bozorida inson resurslarining qisqarishi, ijtimoiy tengsizlikning kuchayishi ham bugungi dolzarb muammolar sirasiga kiradi.

Yuqoridagi omillarni inobatga olgan holda, ushbu maqolada sun'iy intellektning rivojlanish tendensiyalari, ularning asosiy yo'nalishlari, jamiyatga ta'siri, dolzarb muammolari va kelajakdagi imkoniyatlari atroflicha tahlil qilinadi.

Maqola SI bilan bog‘liq texnik va gumanitar aspektlarni birgalikda ko‘rib chiqib, sun’iy intellektni insoniyat taraqqiyoti kontekstida baholashga harakat qiladi.

Sun’iy intellekt texnologiyalarining rivojlanishi global miqyosda texnologik inqilobni boshlab berdi. Uning tibbiyotda diagnostika, ta’limda individual yondashuv, sanoatda avtomatlashtirish, ijtimoiy tarmoqlarda kontent boshqaruvi kabi ko‘plab sohalarda qo‘llanilishi, SIning universal texnologiyaga aylanganligini isbotlaydi. Shu bilan birga, SI rivojlanishi bir qator xavf va muammolarni ham yuzaga keltiradi: ish o‘rinlarining avtomatlashtirilishi, axloqiy masalalar, xatolik ehtimollari va yolg‘on axborot tarqalishi. Kelajakda SI texnologiyalarining yanada samarali va xavfsiz bo‘lishi uchun ularning rivojlanishiga ilmiy, huquqiy va axloqiy nazorat zarur. Shunday qilib, sun’iy intellekt insoniyat oldida yangi imkoniyatlar bilan birga yangi mas’uliyatlarni ham yuzaga keltirmoqda.

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SUN'IY NEYRON TARMOQLARINING NAZARIY ASOSLARI VA AMALIY ILOVALARIDA ISHLASH USULLARI

Anotatsiya. *Ushbu maqolada sun'iy neyron tarmoqlari (SNT)ning nazariy asoslari, ularning ishlash prinsiplari va amaliy qo'llanilish sohalari ko'rib chiqiladi. Maqolada chuqur o'rganish (deep learning), aktivatsiya funksiyalari, o'rganish algoritmlari va arxitekturalar (MLP, CNN, RNN) haqida batafsil ma'lumot beriladi. Shuningdek, SNT'larning zamonaviy texnologiyalar, tibbiyot, avtomatlashtirilgan boshqaruv tizimlari va tabiiy tilni qayta ishlashdagi o'rni tahlil qilinadi. Maqola ilmiy izlanish olib borayotgan talabalar va dasturchilar uchun foydali bo'lishi mumkin.*

Kalit so'zlar. *Sun'iy neyron tarmoqlari, chuqur o'rganish, aktivatsiya funksiyasi, konvolyutsion neyron tarmoq, tabiiy tilni qayta ishlash, tibbiyotda SNT, RNN.*

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METHODS OF WORKING IN THE THEORETICAL FOUNDATIONS AND PRACTICAL APPLICATIONS OF ARTIFICIAL NEURAL NETWORKS

Abstract. *This article reviews the theoretical foundations of artificial neural networks (ANNs), their principles of operation and areas of practical application. The article provides detailed information about deep learning, activation functions, learning algorithms and architectures (MLP, CNN, RNN). It also analyzes the role of ANNs in modern technologies, medicine, automated control systems and natural language processing. The article may be useful for students and programmers conducting scientific research.*

Keywords. *Artificial neural networks, deep learning, activation function, convolutional neural network, natural language processing, ANNs in medicine, RNN.*

So‘nggi o‘n yillikda sun’iy intellekt (SI) texnologiyalarining jadal rivojlanishi dunyo miqyosida turli sohalarda tub o‘zgarishlarga sabab bo‘lmoqda. Ayniqsa, sun’iy neyron tarmoqlari (SNT) ushbu taraqqiyotning asosiy omillaridan biri sifatida ajralib turadi. Biologik neyronlarning ishlash printsipiga asoslangan bu modellar mashina o‘rganishi (machine learning) va chuqur o‘rganish (deep learning) yo‘nalishlarida ilg‘or natijalarga erishishga imkon bermoqda.

Sun’iy neyron tarmoqlarining asosi 1943-yilda Mak-Kallok va Pitts tomonidan taklif etilgan oddiy matematik modelga borib taqaladi. 1980-yillarda orqaga tarqatish (backpropagation) algoritmining ishlab chiqilishi bu sohaning rivojlanishida burilish nuqtasi bo‘ldi. So‘nggi yillarda esa grafik protsessorlar (GPU) yordamida katta hajmdagi ma’lumotlarni qayta ishlash imkoniyati paydo bo‘lishi SNT’larning keng joriy etilishiga zamin yaratdi.

Bugungi kunda SNT’lar inson tafakkuriga yaqin ishlovchi algoritmlar sifatida yuzni aniqlash, nutqni tanish, tilni avtomatik tarjima qilish, haydovchisiz avtomobillarni boshqarish, hatto tibbiy tashxis qo‘yish kabi murakkab vazifalarni bajarishda muvaffaqiyatli qo‘llanilmoqda. Ular nafaqat ma’lumotlarni qayta ishlash, balki yangi bilimlar hosil qilish, prognozlash va o‘z-o‘zini takomillashtirish qobiliyatiga ham ega bo‘lib bormoqda.

Shu boisdan sun’iy neyron tarmoqlar zamonaviy ilm-fan va texnologiyalarning ajralmas bo‘lagiga aylangan. Dasturchilar, muhandislar, tibbiyot xodimlari, moliyachilar va boshqa soha vakillari bu texnologiyalardan unumli

foydalanmoqda. Mazkur maqolada SNT'larning nazariy asoslari, turlari, ishlash mexanizmlari hamda amaliy sohalardagi qo‘llanilishi keng ko‘lamda yoritiladi.

Quyida **Sun'iy neyron tarmoqlari** bilan bog‘liq asosiy tushunchalarni ifodalovchi **jadval** ko‘rinishidagi sxema taqdim etiladi. Ushbu jadvalda neyron tarmoqning har bir bosqichi, uning vazifasi va misollar ko‘rsatilgan:

Sun'iy neyron tarmog‘i ishlash jarayoni - jadval

Bosqich	Vazifasi	Misollar yoki Izohlar
1. Kirish qatlami (Input)	Dastlabki ma'lumotlarni qabul qiladi	Tasvir, matn, ovoz, raqamli ma'lumot
2. Og‘irliklar (Weights)	Ma'lumotlarga ta'sir darajasini belgilaydi	Har bir kiruvchiga o‘ziga xos og‘irlik biriktiriladi
3. Aktivatsiya funksiyasi	Nolinearlikni kiritadi	ReLU, Sigmoid, Tanh funksiyalari ishlatiladi
4. Yashirin qatlam(lar)	Ma'lumotni tahlil qiladi, xususiyatlarni o‘rganadi	Bir yoki bir nechta yashirin qatlam bo‘lishi mumkin
5. Chiqish qatlami (Output)	Natijani hosil qiladi	Klass (0/1), sonli qiymat, ehtimollik
6. Yo‘qotish funksiyasi (Loss)	Taxmin va real natija o‘rtasidagi farqni hisoblaydi	MSE (regressiya), CrossEntropy (klassifikatsiya)
7. Orqaga tarqatish (Backprop)	Xatolikni tarmoqqa qaytaradi	Tarmoq o‘zini tuzatish uchun xatolikni tarqatadi
8. Optimallashtirish	Og‘irliklarni yangilaydi	Gradient pasayishi, Adam, RMSprop algoritmlari
9. Modelni baholash	Natija qanchalik to‘g‘ri ekanligini tekshiradi	Aniqlik (accuracy), F1-score, ROC-AUC, MSE, MAE va h.k.

Sun'iy neyron tarmoqlari hozirgi zamonaviy texnologik taraqqiyotning asosiy yo‘nalishlaridan biri bo‘lib, inson miyasi faoliyatini sun'iy muhitda modellashtirishga intiladi. Ular mashina o‘rganishi va chuqur o‘rganish (deep learning) sohalarining yuragi hisoblanadi. Oddiy matematika modellari asosida boshlangan bu g‘oya, bugun milliardlab parametrlarni o‘z ichiga olgan ulkan neyron arxitekturaga aylanib, tasvirlarni tanish, nutqni tushunish, matnlarni tahlil qilish va hattoki tibbiy tashxis qo‘yish kabi murakkab muammolarni hal etishda katta muvaffaqiyatlarga erishdi.

SNT'lar orqali amalga oshirilayotgan modellar mustaqil qaror qabul qilish, bashorat qilish, optimallashtirish va yangi bilim hosil qilish imkoniyatlariga ega bo‘lmoqda. Ular nafaqat an'anaviy dasturlashning cheklovlarini yengib o‘tdi, balki

turli noaniq va murakkab vaziyatlarda ham inson darajasida yoki undan yuqori natijalarga erisha olishini isbotladi.

Sun’iy neyron tarmoqlarning muvaffaqiyatli ishlashi uchun ma’lumotlar sifati, to‘g‘ri arxitektura tanlash, o‘quv jarayoni va optimallashtirish strategiyalari katta rol o‘ynaydi. Shu sababli, SNT’larni tadqiq qilishda nafaqat amaliy yondashuv, balki chuqur nazariy bilimlar ham zarurdir.

Kelajakda SNT’larning rivojlanishi bilan turli sohalarda — xususan, tibbiyot, transport, energetika, ta’lim va xavfsizlik tizimlarida — inqilobiy o‘zgarishlar bo‘lishi kutilmoqda. Ular inson aqlini to‘ldiruvchi kuchli vosita sifatida jamiyat rivojiga xizmat qiladi. Shu boisdan, ushbu texnologiyalarni o‘rganish, rivojlantirish va ulardan oqilona foydalanish bugungi kun ilm-fani oldidagi dolzarb vazifalardan biridir.

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SUN'IY INTELLEKTNING KASBLARGA TAHDIDI YOKI YORDAMCHILIGI

Annotatsiya. *Ushbu maqolada sun'iy intellekt (SI) texnologiyalarining mehnat bozori va kasblar rivojlanishiga ta'siri yoritilgan. Dastlab, SI'ning qanday ishlashi, u bilan bog'liq asosiy tushunchalar va so'nggi yutuqlar haqida ma'lumot beriladi. So'ngra, ayrim kasblar uchun xavfli bo'lishi mumkin bo'lgan jihatlar bilan birga, yangi imkoniyatlar yaratish salohiyati ham tahlil qilinadi. Asosiy maqsad — SI'ni faqat tahdid emas, balki inson salohiyatini kuchaytiruvchi vosita sifatida ko'rsatishdir.*

Kalit so'zlar. *Sun'iy intellekt, mehnat bozori, avtomatlashtirish, kasblar, texnologik inqilob, raqamli transformatsiya, mashinali o'rganish.*

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ARTIFICIAL INTELLIGENCE'S THREAT OR HELP TO PROFESSIONS

Abstract. *This article examines the impact of artificial intelligence (AI) technologies on the labor market and the development of professions. First, it provides information on how AI works, the main concepts related to it, and recent developments. Then, it analyzes the potential for creating new opportunities, along with the aspects that may pose risks for certain professions. The main goal is to present AI not only as a threat, but also as a tool to enhance human potential.*

Keywords. *Artificial intelligence, labor market, automation, professions, technological revolution, digital transformation, machine learning.*

Zamonaviy dunyoda texnologik taraqqiyot inson hayotining barcha jabhalariga kirib kelmoqda. Shu jumladan, robototexnika va avtomatlashtirish sanoat, sog‘liqni saqlash, qishloq xo‘jaligi va xizmat ko‘rsatish sohalarida muhim o‘rin tutmoqda.

21-asr texnologik inqilob davri bo‘lib, insoniyat hayotining barcha sohalariga raqamli transformatsiya kirib kelmoqda. Bu jarayonda eng muhim o‘rinlardan birini sun’iy intellekt (SI) egallamoqda. Bugungi kunda SI nafaqat oddiy hisoblash vazifalarini bajaruvchi tizim, balki murakkab masalalarni yechuvchi, muloqot qila oluvchi va hatto kreativ fikrlay oluvchi vosita sifatida shakllanmoqda.

SI texnologiyalari ishlab chiqarish, tibbiyot, ta’lim, transport, bank sohasi va boshqa ko‘plab sohalarda jadal sur’atlarda joriy etilmoqda. Natijada, ayrim kasblarning yo‘qolish xavfi yuzaga kelmoqda. Shu bilan birga, yangi kasb va imkoniyatlar ham yaratilmoqda.

Ushbu maqolada quyidagi savollarga javob izlanadi:

- Sun’iy intellekt qaysi kasblar uchun xavf tug‘diradi?
- Qaysi kasblar SI orqali rivojlanadi?
- Insonlar SI'ga qarshi kurashish o‘rniga uni qanday qilib o‘z foydasiga ishlatishi mumkin?

Sun’iy intellekt — bu kompyuter tizimlariga inson aql-idrokini taqlid qilish imkonini beruvchi texnologiyalar majmuasidir. U mashinali o‘rganish, chuqur o‘rganish, tabiiy tilni qayta ishlash kabi tarmoqlarni o‘z ichiga oladi. Kasb esa, insonning doimiy mehnat faoliyatidir. Texnologiyalar rivojiga qarab kasblar o‘zgarib, yangilari paydo bo‘ladi yoki eskilari yo‘qoladi.

Ko‘pgina tadqiqotlar shuni ko‘rsatadiki, rutinali, algoritmik va qayta-qayta takrorlanadigan ishlar SI tomonidan osongina egallanishi mumkin. Masalan:

- Kassa operatorlari
- Ma’lumotlarni kirituvchi mutaxassislar
- Oddiy yurist yordamchilari
- Grafik tahlilchi hisobchilar

Oxford universitetining 2013-yilgi tadqiqotiga ko‘ra, keyingi 20 yil ichida AQShdagi 47% kasblar SI va avtomatlashtirish ta’sirida o‘zgarishi mumkin.

SI bilan ishlashni o‘rgangan mutaxassislar mehnat bozorida yanada yuqori qiymatga ega bo‘lishadi. Misollar:

- Tibbiy tashxis qo‘yuvchi SI yordamchi mutaxassislar
- Sun’iy intellekt asosida dasturlovchilar
- Ma’lumot tahlilchilari (Data Scientists)
- Avtomatlashtirilgan tizimlar muhandislari

Bundan tashqari, kreativ sohalarda — dizayn, yozuvchilik, musiqa va san’at — SI inson uchun ilhom manbai bo‘lishi mumkin, ammo uni to‘liq almashtira olmaydi.

Kelajakda eng kerakli ko‘nikmalar — tanqidiy fikrlash, muammoga yechim topish, insonlararo muloqot, ijtimoiy ong va kreativlik bo‘ladi. Bularni esa SI egallay olmaydi. Shu bois inson resurslarini rivojlantirish SI tahdidlariga eng yaxshi javob bo‘ladi.

Sun’iy intellekt — bu kasblar uchun nafaqat tahdid, balki ulkan imkoniyatlar eshigi hamdir. U oddiy va takrorlanuvchi ishlarni avtomatlashtiradi, biroq inson uchun murakkab, kreativ va hissiy ong talab etiladigan faoliyat sohalarini ochadi. Kelajakdagi muvaffaqiyat kaliti — SI’ni raqib emas, balki hamkor sifatida ko‘ra olishdadir. Shu bois, har bir inson o‘zini doimiy ravishda rivojlantirishi, yangi ko‘nikmalarni egallashi va texnologiyalar bilan hamnafas bo‘lishi kerak.

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YOSH FUTBOLCHILARNING SOMATOTIPIK XUSUSIYATLARI VA ULARNING SPORTGA IXTISOSLASHUVDAGI AHAMIYATI: ANTROPOMETRIK KO‘RSATKICHLAR ASOSIDA NAZARIY TAHLIL

Annotatsiya: *Mazkur maqolada yosh futbolchilarning somatotipik xususiyatlari va ularning sportga ixtisoslashuvdagi ahamiyati nazariy manbalar asosida tahlil qilinadi. Somatotiplarning (ektomorf, mezomorf, endomorf) morfologik belgilari, ularning jismoniy faoliyatga, ayniqsa futbolga mosligi ilmiy adabiyotlar asosida ko‘rib chiqiladi. Shuningdek, antropometrik ko‘rsatkichlarning (bo‘y, tana massasi, tana massasi indeksi, bel-son nisbati va boshqalar) sportda seleksiya va mashg‘ulot jarayonlaridagi roli yoritiladi. Maqolada yosh sportchilarning individual tana tuzilish xususiyatlarini hisobga olgan holda ularni to‘g‘ri yo‘naltirish zarurati asoslab beriladi. Ushbu tahlil sportga ixtisoslashuvning nazariy asoslarini chuqurlashtirish va seleksiya jarayonida ilmiy yondashuvni shakllantirishga xizmat qiladi.*

Kalit so‘zlar: *somatotip, antropometriya, yosh futbolchilar, sportga ixtisoslashuv, ektomorf, mezomorf, endomorf, tana massasi indeksi, seleksiya, jismoniy rivojlanish.*

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SOMATOTYPIC CHARACTERISTICS OF ADOLESCENT FOOTBALL PLAYERS AND THEIR ROLE IN SPORTS SPECIALIZATION: AN EMPIRICAL ANALYSIS BASED ON ANTHROPOMETRIC INDICATORS

Abstract: *This article presents a theoretical analysis of the somatotypic characteristics of adolescent football players and their significance in the process of sports specialization. The morphological traits of different somatotypes (ectomorph, mesomorph, endomorph) and their relevance to physical activity—particularly football—are examined through a review of existing scientific literature. Furthermore, anthropometric indicators such as height, body mass, body mass index (BMI), and waist-to-hip ratio are discussed in relation to their role in talent identification and training processes. The paper emphasizes the importance*

of accounting for individual body structure traits when guiding young athletes. This analysis contributes to a deeper theoretical understanding of sports specialization and supports the implementation of evidence-based approaches in the selection and development of young football players.

Keywords: *somatotype, anthropometry, adolescent football players, sports specialization, ectomorph, mesomorph, endomorph, body mass index, talent identification, physical development.*

Bugungi kunda sportchilarni tayyorlash jarayonida ularning individual morfologik va fiziologik xususiyatlarini hisobga olish muhim metodologik talablardan biri sanaladi. Ayniqsa, futbol kabi yuqori darajada jismoniy va taktik tayyorgarlikni talab qiluvchi sport turlarida sportchining tana tuzilishi — somatotipi, ularning jismoniy imkoniyatlari va sportga moslashuv darajasiga bevosita ta’sir ko‘rsatadi. Shu nuqtai nazardan, o‘smir yoshidagi futbolchilarni sportga yo‘naltirishda, ular bilan olib boriladigan mashg‘ulot jarayonlarini rejalashtirishda antropometrik ko‘rsatkichlar va somatotipik xususiyatlar asosiy mezonlardan biri sifatida qaralmoqda.

Ilmiy adabiyotlarda somatotip tushunchasi shaxsning genetik va ekologik omillar bilan belgilanadigan tana tuzilmasining umumiy tipologik tavsifi sifatida izohlanadi. Ektomorf, mezomorf va endomorf kabi asosiy somatotiplar sportchilarning harakat faolligi, chidamliligi, tezligi, moslashuvchanligi kabi ko‘rsatkichlari bilan bevosita bog‘liq. Aynan shu jihatlar o‘smir yoshidagi sportchilarning sportga ixtisoslashuvida muhim ahamiyat kasb etadi.

Mazkur maqolada yosh futbolchilarning somatotipik xususiyatlari va ularning sportga ixtisoslashuv jarayonidagi ahamiyati ilmiy-nazariy manbalar asosida tahlil qilinadi. Antropometrik ko‘rsatkichlar asosida morfologik xususiyatlarning sport yutuqlari va seleksiya jarayonlariga ta’siri yoritiladi hamda ilmiy-nazariy asoslar bilan boyitiladi.

Somatotip tushunchasi va uning ilmiy-nazariy asoslari: Sport fiziologiyasida somatotip atamasi sportchining tana tuzilishi, mushak-mustahkamligi, yog' massasi va suyak tuzilmasi asosida shakllanadigan individual morfologik profilini anglatadi. Bu tushuncha ilk bor V.H. Sheldon tomonidan ilgari surilgan bo‘lib, u insonlarni uch asosiy somatotipga ajratgan: ektomorf – oriq va uzun gavdali, mushak massasi kam; mezomorf – o‘rtacha yoki katta mushak massasiga ega, kuchli tuzilgan; endomorf – keng gavdali, yog‘ qatlamlari nisbatan ko‘proq bo‘lgan tana tuzilmasi. Keyinchalik bu tasnif sportchilarga nisbatan moslashtirilgan va turli sport turlari uchun optimal somatotipik profillar aniqlangan.

Futbol – bu harakat dinamikasi yuqori, funksional yuklama zichligi katta sport turi hisoblanadi. Bu sportda muvaffaqiyat qozonish uchun sportchi nafaqat texnik va taktika jihatdan, balki tana tuzilmasi jihatidan ham mos kelishi kerak. Amaliy kuzatuvlarga ko‘ra, hujumchi va yarim himoyachilar orasida tezlik va chidamlilik talab etilganligi bois ektomorf–mezomorf aralash somatotip ustunlik qiladi. Himoyachilar va darvozabonlar esa baland bo‘yli, keng gavdali, kuchli mushak tuzilmasiga ega mezomorflar orasidan chiqadi. Shunday ekan,

futbolchilarni pozitsiyalar bo‘yicha somatotiplarga mos yo‘naltirish nafaqat ularning salomatligi, balki professional o‘sishi uchun ham muhimdir.

Antropometriya — bu inson tanasining fizik ko‘rsatkichlarini o‘lchash orqali ularning sog‘lom rivojlanish holati va sportga yaroqliligini aniqlash usulidir. Yosh futbolchilarda odatda quyidagi ko‘rsatkichlarga e’tibor qaratiladi: bo‘y uzunligi, tana vazni, tana massasi indeksi (BMI), yelka kengligi, son-ham bel aylanasi, tana yog‘ foizi va mushak massasining nisbati. Masalan, 13–16 yoshdagi futbolchilar uchun bo‘y va tana vaznining uyg‘unligi mashg‘ulotlarda yuklama muvozanatini belgilashda asosiy omillardan biridir. Antropometrik ko‘rsatkichlar orqali somatotipik toifaga aniqlik kiritish mumkin bo‘lib, bu seleksiya va mashg‘ulotni differensiallashtirishda yordam beradi.

Shu bilan birga, bu ko‘rsatkichlar sportchining o‘sish sur’ati va biologik yoshi haqidagi muhim ma’lumotlarni beradi. Ayniqsa, balog‘atga yetish davrida tana tuzilmasida keskin o‘zgarishlar yuz berishi bois, murabbiylar har bir futbolchining individual rivojlanish trayektoriyasini hisobga olishlari lozim.

Futbolchilarni ixtisoslashtirishda ularning somatotipi asosida individual yondashuvni shakllantirish — bu bugungi zamonaviy sportning talabidir. Chunki har bir futbolchi bir xil mashg‘ulot uslubiga birdek moslasha olmaydi. Masalan, ektomorf tipidagi sportchilarga kuch yuklamalarini oshirish orqali mushak massasini oshirish tavsiya qilinadi, mezomorflar uchun esa intensiv harakat va koordinatsion mashqlar foydalidir. Endomorflar uchun esa yog‘ miqdorini nazorat qilish, parhez va chidamlilik mashg‘ulotlariga urg‘u berish kerak.

Bunday farqlash seleksiya jarayonida ham muhim: har bir futbol pozitsiyasiga mos tana tuzilishiga ega o‘smirlar alohida kuzatiladi va potensialiga qarab saralanadi. Bu nafaqat sport natijalarini yaxshilaydi, balki yosh sportchilar salomatligini saqlash, ortiqcha zo‘riqishlarni oldini olishga ham xizmat qiladi.

Shunday qilib, somatotipik tahlil sportga ixtisoslashuvning faqat fiziologik emas, balki psixologik, motivatsion va moslashuvchanlik omillari bilan ham uyg‘unlashgan ko‘p qirrali jarayon ekanligini anglatadi.

Yosh futbolchilarning somatotipik xususiyatlari va ularning sportga ixtisoslashuv jarayonidagi o‘rni bugungi kunda sport fanining dolzarb yo‘nalishlaridan biri hisoblanadi. Ushbu maqolada qayd etilganidek, har bir o‘smir sportchining morfologik tuzilmasi – ya’ni tana massasi, bo‘y uzunligi, mushak va yog‘ qatlamlari nisbati, tana proporsiyasi kabi antropometrik ko‘rsatkichlari – uning qaysi futbol pozitsiyasiga mos kelishi va qanday mashg‘ulot uslubini talab qilishini belgilaydi.

Somatotiplar bo‘yicha tasniflash sportchilarning o‘ziga xos jismoniy imkoniyatlarini aniqlashga xizmat qiladi. Masalan, mezomorf tuzilmali futbolchilar kuch, tezlik va bardoshlilikni talab qiladigan markaziy pozitsiyalarda ustunlik qilsa, ektomorf somatotipli sportchilar yengillik va harakatchanlik talab etiladigan qanot himoyachisi yoki hujumchi rollariga mos keladi. Bunday yondashuv sportchilarni faqat umumiy salohiyatga emas, balki aniq sport funksiyasiga muvofiq saralash imkonini beradi.

Antropometrik ko‘rsatkichlarning muntazam monitoringi orqali sportchilar salomatligini nazorat qilish, mushak massasining rivojlanish sur’ati, tana yog‘i foizi, balog‘at yoshi bilan bog‘liq o‘zgarishlarni aniqlash mumkin. Ayniqsa, o‘smirlar organizmi tez o‘zgaruvchan bo‘lgani sababli, har bir futbolchi bilan individual ishlash, ularning o‘ziga xos fiziologik imkoniyatlari va cheklovlarini hisobga olish zarur. Bu esa nafaqat mashg‘ulot samarasini oshiradi, balki jarohatlanish xavfini kamaytiradi va sportdagi uzoq umrni ta’minlaydi.

Bundan tashqari, somatotipik baholash seleksiya jarayonlarida ob’ektiv mezon sifatida qo‘llanilishi mumkin. Odatda seleksiya sub’ektiv qarorlar asosida amalga oshiriladi, biroq ilmiy yondashuv natijasida futbolchilar aniq tana tuzilmasi va harakat imkoniyatlariga asoslangan holda yo‘naltiriladi. Bu esa sport maktablarida, akademiyalarda va klublarda samarali kadrlar zaxirasini shakllantirishga xizmat qiladi.

Yakuniy xulosaga ko‘ra, futbolchilarni ixtisoslashuvga tayyorlashda somatotipik tahlil va antropometrik o‘lchovlar asosiy vositalardan biri sifatida qaralishi kerak. Ular murabbiylar va sport mutaxassislariga har bir futbolchining optimal sport yo‘nalishini aniqlash, mos yuklama rejimini belgilash, mashg‘ulot va tiklanish strategiyalarini to‘g‘ri tuzishda katta yordam beradi. Shu boisdan, yosh futbolchilarning jismoniy tuzilishini chuqur o‘rganishga asoslangan seleksiya tizimini shakllantirish zarurati mavjud.

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RELATIONSHIP OF SOIL MELIORATIVE SALINING WITH ECOLOGICAL PROBLEMS

Abstract. *A number of scientific-research works aimed at identifying and eliminating processes that negatively affect the fertility of irrigated soil and land reclamation in the developing agricultural sector of our republic are being carried out and positive results are being achieved. That is why it is important to determine the influence of natural and anthropogenic factors on the microbiological activity of the irrigated meadow alluvial soils of the Kashkadarya oasis with varying degrees of salinity, as well as the extent to which these processes increase soil fertility and crop productivity.*

It consists in determining the influence of various natural and anthropogenic factors, including soil salinity and salt content, on pale gray soils with varying degrees of salinity.

Key words. *Salinity, ecology, irrigated agriculture, desertification, productivity, relief, natural, thermostat, agrophysics.*

Introduction. The research was carried out in field, laboratory and chamber conditions according to the standard methods generally accepted in soil science. Agrochemical and agrophysical methods were used in the research. Land reclamation has become a very serious problem at the present time, the reason for this is that, firstly, it is necessary to provide food and other agricultural products to the ever-increasing population of Kurram, and secondly, human reclamation due to the development of industry while increasing its capacity, it was felt that there is a need to develop many new lands, to expand the cultivated areas and to improve the reclamation of irrigated lands [5]. The amelioration condition, salt content, agrochemical and agrophysical properties of the irrigated oases' light-colored soils are comparatively studied, factors and indicators that have a negative effect on soil fertility and the growth and development of agricultural crops, and their optimization is defined.[7]

Materials and methods. The availability of land in irrigated agriculture limits the possibilities of increasing soil fertility and yield of cotton and other crops. The implementation of large-scale reclamation works is unable to stop the process of soil salinization. Districts (farms) studied by the scientists of our republic depend on the level and level of mineralization of ground water, the relief conditions of the area, the level of irrigation of the land, the condition of the collector-irrigation networks and the types of cultivated crops [7]. Acceleration of irrigated agriculture in the oasis activates the processes of salt accumulation, increases the secondary salinity in the soil, and the current state of the collector-zower networks allows the mineralized seepage waters to flow and keep their level at a certain depth. Therefore,

it is natural for the salt reserves to increase in the oasis if quick melioration measures are not applied to prevent the processes of secondary salinization in the soil and the factors that cause them.

Results and discussion. According to the formation and characteristics of climate conditions, the territory of Kashkadarya region belongs to the subtropical climate group and is separated as a separate Kashkadarya climate district of Turan province.

The existence of almost all types of minerals has been found on the Kashkadarya soil. After all, the mineral wealth, which is the result of various geological periods and processes, is related to the geological development characteristics of a certain place. It is known that until the Neogene period, the plains of the region were the eastern part of the warm sea. Therefore, it can be said that the territory of the region was part of the large oil and gas basin in the current Turan lowland. Today, the natural gas produced in the regional mines meets not only the cities and villages of our republic, but also the needs of other neighboring republics. Gas, gas condensate and oil are obtained mainly from cracks and collectors of corallite limestones, fossilized coral polyps, between the first marine deposits of the Jurassic period, at a depth of 1.5-3.5 thousand meters.

Distribution of soils by degree of salinity.

№	Salinity level	The amount of salts in the 0-100 cm layer	
		Dry residue	Including chlorine
1.	Not salted	<0,3	<0,01
2.	Lightly salted	0,3-1,0	0,01-0,05
3.	Medium salted	1,0-2,0	0,05-0,10
4.	Strongly salted	2,0-3,0	0,10-0,15
5.	Salted	>3,0	>0,15

Humus content is very low in pale gray soils, 1.2-1.4% in layer A. Typical gray soils contain between 1.5 and 4%, and dark gray soils contain up to 4.5%. Accordingly, the humus reserve in 1 m of soil thickness reaches 50-60 tons in light gray soils, and 140-160 tons in dark gray soils. The absorption capacity of gray soils is also small, which is directly related to the low humus condition of the soil. 80-90% of absorbed cations correspond to calcium and 10-15% to magnesium cations.

Conclusion. Conclusion From the evidence presented above, it became clear that the purpose of creating land reclamation measures is to create conditions that

ensure the maximum possible yield of crops - the optimal water, salt, nutrient, and air composition in the soil, with the efficient use of running water. Salts appear everywhere and accumulate in the upper layers of the earth's surface. Nevertheless, the area of saline soils, and especially the area of salt marshes, does not occupy a very large area on the earth's surface, because the accumulation of salts in the soil requires certain conditions.

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MODERN AND DOMESTIC METHODS OF SYSTEMIC AND REGIONAL LYMPHOTROPIC THERAPY IN RESUSCITATION CASES

Abstract:*The publication of the article is devoted to the review of literature data on the use of clinical lymphology methods in resuscitation cases. Its first part defines the main concepts and terms related to the general relationships of the lymphatic and lymphoid systems of the human body with the methods of influencing them with drugs and physical technologies to achieve the effect of lymphosanitation (lymphostimulation, lymphocorrection, lymphoprotection, lymphosuppression). Modern definitions of the concept of "lymphatic region" and its main links are given, the features of various methods of lymphotropic therapy are shown. The second part presents specific results of the use of lymphotropic therapy in various forms of acute and chronic inflammatory pathology and trauma of the pharynx, nose and paranasal sinuses, larynx, ear, as well as for preventive purposes, to reduce the frequency and severity of post-intubation laryngeal complications in young children and in adults with prolonged tracheal intubation. A conclusion is made about the prevalence of studies aimed at developing methods of regional lymphotropic (indirect) therapy. At present, they are considered as effective methods of stopping various forms of inflammatory pathology of the paranasal, oral and upper respiratory tract. Methods of systemic (direct lymphotropic) therapy in intensive care are not yet widely used, are used much less frequently and in a small number of patients. Both directions require further research and technical developments, since today the potential of the intensive care state, where they could find their application, is far from exhausted.*

Keywords:*lymphology, lymphatic system, lymphoid system, lymphatic region, lymphotropic therapy, lymphosanitation, resuscitation, critical condition.*

Modern lymphology is an integrated medical science, which simultaneously examines two interconnected systems of the human body – the lymphatic and lymphoid systems, containing lymph, lymphatic vessels, organized lymphoid structures and cells.

The lymphatic system, as a subsystem of the cardiovascular system, includes the lymphatic bed (lymphatic capillaries, vessels, trunks, right lymphatic and thoracic ducts), including the lymph flow pathways within the lymph nodes, and the lymph itself with its cellular contents.

The lymphoid system is largely associated with the immune system, which includes such organs as the red bone marrow and thymus (primary lymphoid organs), spleen, tonsils, lymphoid parenchyma of the lymph nodes, single and group clusters of lymphoid tissue, as well as individual lymphoid cells in tissues and organs (secondary lymphoid organs). Both groups of organs are subordinated. The morphofunctional argument for the conjugacy of the lymphatic and lymphoid systems are the lymph nodes, which allowed Yu. I. Borodin (1993) to call the lymph node a marker of environmental pressure and a regulator of regional hemo- and lymphodynamics. The anatomical space where the main transport and metabolic processes occur, the first structural and functional disorders are recorded, on the one hand, and the processes of natural intracorporeal lymphodetoxification are carried out, on the other hand, is the lymphatic region.

The lymphatic region includes three main links: 1 - non-vascular microcirculation pathways in the interstitium, where accumulation and transport of mobile tissue fluid occurs in the direction of the roots of the lymphatic system, lymphatic capillaries; 2 - formed vascular lymphatic structures (lymphatic capillaries, vessels), which form and transport lymph; 3 - regional lymph nodes, as well as single or group accumulations of lymphoid tissue involved in the transport of lymph and its detoxification. All elements of the lymphatic region, functioning synchronously and interconnectedly, form a structural and functional unit that ensures drainage and detoxification of cells, pericellular space, tissue as a whole. Disturbances in interstitial transport and lymphatic drainage play not only an important role in the pathogenesis of inflammatory processes, but are also taken into account in the treatment of these disorders. The above facts served as the basis for developing a program of endoecological rehabilitation, a system for restoring endoecological (pericellular, interstitial) homeostasis by influencing interstitial humoral transport, lymphatic drainage and lymph detoxification. Effective organ rehabilitation can only be achieved with morphofunctional adequacy of these processes.

The effects on the lymphatic and lymphoid systems using drugs, medical, mechanical and physical technologies have improved the treatment results of many surgical, cardiological, traumatological, gynecological, infectious and other diseases. At present, they are united in the concept of "clinical lymphology", which relates to virtually all medical specialties and areas.

There are two groups of methods of therapeutic effect of drugs on the lymphatic system - direct and indirect. Direct (endolymphatic) methods include

cannulation of the main or peripheral lymphatic vessels, lymph nodes, thoracic duct, which involves the creation of a high and long-term concentration of the drug in the lymphatic system with a single administration of an official single dose from 1 to 3 days. However, from the point of view of Yu. M. Levin (1986), this is not always possible, since in the central lymph and individual lymph nodes, which are the transport continuation of the lymphatic vessel used for puncture, a high concentration of drugs is created, and in others, including those involved in the pathological process, the content of drugs may be very small or absent altogether. In addition, catheterization of lymphatic vessels is a labor-intensive and traumatic manipulation, which requires special instruments, an equipped operating room and the necessary surgical skills of the doctor. Taking these circumstances into account, a number of specialists have proposed a non-surgical method of administering drugs (subcutaneously or intramuscularly, retroperitoneal administration, submucosal injections) depending on the regionality of lymph outflow. Substances are delivered by injection into the area of the greatest representation of lymphatic capillaries while creating conditions for their increased flow into the lymphatic system. This method is called indirect endolymphatic administration or regional lymphotropic therapy. It allows for a high concentration of the drug in the lymphatic region and directly in the pathological focus, but at the same time significantly simplifies the method of administration. It eliminates a number of serious complications associated with surgical manipulations, makes regional lymphotropic therapy more accessible not only to surgeons, but also to other specialists, including those working in the field of outpatient and polyclinic services.

Based on the nature of the resulting effect, all methods of influencing the lymphatic region can be conditionally divided into lymphatic stimulation, lymphatic correction, lymphatic protection and lymphatic suppression.

The most famous and most frequently used of them is the method of lymphatic stimulation, the purpose of which is to increase the volume and speed of lymph outflow from organs. Any muscle and water load (both with internal water consumption and with all kinds of water procedures) gives a significant lymphatic stimulating effect on the body. In medical practice, numerous physiotherapeutic and medicinal means are used as methods of lymphatic stimulation. They change the osmotic pressure in tissues, increasing the permeability of the vascular wall of blood and lymphatic microvessels, promote the disaggregation of megamolecules in the interstitium with the release of free water from them. Various cocktails are most widely used here, including glucose, lidocaine, dicaine, lidase, dexamethasone and a number of other drugs. Of the physical methods of influence, low-intensity laser and ultrasound have the best lymphatic stimulating effect.

Lymphatic stimulation can include two types – dynamic and metabolic. The purpose of dynamic lymphatic stimulation is to increase the volume and linear velocity of lymphatic outflow in the vessels of an organ or body part. The lymphatic stimulator increases the mass of free (mobile), not bound to protein molecules, tissue fluid in the interstitium. In this case, the intra-tissue pressure increases, the fibrous connective tissue framework stretches, the lymphatic capillaries increase in

diameter, interendothelial contacts become open, intravascular pressure drops, tissue fluid resorption in the capillaries increases, the mass of newly formed lymph increases, and lymphatic flow intensifies. Metabolic lymphatic stimulation is aimed at improving the cellular composition and morphofunctional state of cells in lymphoid organs and tissues. By using drugs that affect the cells of lymphoid organs for therapeutic and prophylactic purposes, we can talk about their lymphatic correction and lymphoprotection (unloading), which can be considered as options for metabolic lymphatic stimulation.

The method of lymphosuppression or lymphodepression is used, mostly, oncology to block the spread of cancer cells through the lymphatic pathways in conditions of tumor expansion.

In otolaryngology, due to the specificity of the manifestations of inflammatory processes in the ENT organs and the reaction of regional lymph nodes, regional lymphotropic methods are mostly used therapy. Their development began about 20 years ago, in the late 90s of the 20th century.

C .V. Maltsev (2000) proposed using regional lymphotropic antibiotic therapy as part of a comprehensive conservative treatment of patients with decompensated chronic tonsillitis. The essence of the method is to administer an antibiotic into the lymphatic region of the palatine tonsils - the area of the digastric-jugular node, the "sentinel" for the tonsils. The antibiotic solution is administered subcutaneously at the border of the upper and middle thirds of the sternocleidomastoid muscle along its anterior edge,

c both sides. In parallel, in order to stimulate regional lymph flow, ultrasound is applied to this area. The course of treatment is 5-7 procedures. Subsequently, taking into account the opinion of colleagues about the possibility of inflammatory reactions and swelling of soft tissues, the author abandoned injections and proposed a more gentle method, which included only phonophoresis of an antibacterial drug on an ointment basis. Analysis of the treatment results did not reveal any significant differences between purely phonophoretic and injection-phonophoretic methods.

A. V. Golovnev (2000) used the drug T-activin for regional lymphotropic therapy of chronic tonsillitis, proving in an animal experiment its more pronounced effect against the background of radon water balneotherapy procedures.

E. G. Shakhova, S. E. Kozlovskaya (2005) used phonophoresis to introduce an aqueous solution of polycatan diluted 1:20 into the area of regional lymph nodes of the palatine tonsils for 2 minutes. The procedure was performed in combination with ultrasonic vacuum lavage of the tonsillar lacunae. Bacteriological analysis of microbial contamination and morphological examination of the tonsils revealed the effectiveness of the method in 60% of patients compared to traditional therapy.

To assess the effectiveness of regional lymphotropic therapy in the treatment of patients with chronic tonsillitis, R. O. Stanishevsky (2013) conducted a study of the pro- and antioxidant activity of the blood serum of patients with this disease. Before and during treatment, the content of proinflammatory (IL-1B; TNF-a) and anti-inflammatory (IL-4) cytokines was determined in the blood serum and secretions of the lacunae using the enzyme immunoassay method. It was proven that

lymphotropic therapy normalizes the systemic reaction, the content of IL-4 and TGF-B1 by 7.1 and 16.8%, respectively.

In rhinology, the first clinical studies on the use of lymphological methods were conducted by V. Yu. Andronnikov, M. Ya. Kozlov, E. A. Tsvetkov (1995) in children with rhinosinusogenic orbital complications. The authors used the method of endolymphatic (direct) administration of an antibiotic through a lymphatic vessel catheterized on the foot. The technique is recognized as effective and recommended for use as part of the algorithm for the treatment of severe forms of chronic rhinosinusitis and rhinogenic orbital complications. K. Kasimov et al. (2018) experimentally and clinically showed the advantage of using regional lymphotropic therapy in comparison with traditional therapy in the treatment of inflammatory diseases of the paranasal sinuses. They conducted a comparative analysis of the treatment of patients with inflammatory diseases of the paranasal sinuses, using the introduction of ampicillin into their cavities and lymphotropically into the zone of the lymphatic region. During lymphotropic treatment, drugs were administered through the subcutaneous tissue of the submandibular region, in the projection of the submandibular lymph nodes. Clinical recovery among patients with acute purulent maxillary sinusitis was 72.5% with traditional therapy and 94.4% after lymphotropic therapy. In the work of O. E. Malysheva (2011), a comparative analysis of traditional treatment and lymphotropic antibacterial therapy in combination with ozone in patients with chronic maxillary sinusitis was carried out. Ozonation of sterile isotonic sodium chloride solution was carried out using the Medozons BM 01 ozonizer. The resulting solution with an ozone concentration of 4-6 mg / l was used to rinse the maxillary sinus through a catheter. The procedure was performed once a day.

7. First-generation cephalosporins were used as an antibacterial drug for lymphotropic therapy. The effectiveness of this method was confirmed by a microbiological study of the maxillary sinus discharge. In the group where lymphotropic therapy was used, complete decontamination of the sinuses was achieved in 71.9% of cases, while in patients receiving traditional therapy it was only 54.8%. In addition to endolymphatic administration of antibiotics, D. V. Kravchenko (1997) proposed regional immunostimulating lymphotropic therapy for inflammatory diseases of the nose and paranasal sinuses accompanied by various types of immunodeficiency states. He injected the immunomodulator T-activin into the submandibular region on the affected side (the lymphatic region of the sinuses), achieving a more pronounced effect compared to traditional treatment.

The first studies of the effectiveness of regional lymphotropic therapy in otology were conducted by H. E. Shaikhova et al. (1999). They studied the morphology lymphatic region of the middle ear in chinchilla rabbits with experimental acute otitis media. A solution of antibiotic and lasix was used as a lymphotropic drug, which were injected subperiosteally into the mastoid process area of the diseased ear. A decrease in the inflammatory process was noted due to stimulation of the drainage function of the regional lymph nodes.

D.V. Kravchenko (2002) used lymphotropic administration of the immunomodulator "Tamerit" (100 mg) to correct immune disorders in patients with acute otitis media by preliminary infiltration of the retroauricular area with lidase (12 U) in 0.5% novocaine solution. The positive effect of this procedure on the course of the purulent-inflammatory process and the state of the immune system in this category of patients has been proven.

S. Yu. Krotov (2013) studied the morphology of the lymphatic region of the middle ear in more detail, noting that it includes 3 groups of lymph nodes - postauricular, anterior parotid and submandibular. Each of these groups has certain functions in terms of lymphatic drainage, lymphatic correction and lymphoprotection. He also proposed an important improvement in the technique of lymphotropic therapy in the form of introducing a mixture of drugs into the tissue using low-frequency ultrasound (ultraphonophoresis) on each of the regional lymphatic zones. The developed method is non-invasive, does not cause complications and side effects, has no age restrictions, and can be successfully implemented in ENT hospitals and outpatient clinics. It has been proven that low-frequency ultrasound does not change the molecular composition of drugs administered lymphotropically and promotes their penetration into the tympanic cavity through an intact eardrum. These features served as the basis the use of this technology in the treatment of protracted forms of exudative otitis media.

The combination of regional lymphotropic therapy and ultrasound technologies has also found application in patients with chronic purulent otitis media, both as independent methods of conservative treatment and in combination with surgery in the treatment of diseases of the operated ear.

V. A. Nasyrov et al. (2014) have experience using lymphotropic therapy in the treatment of patients with otogenic intracranial complications. The technique involves the introduction of a medicinal mixture consisting of lidase, hydrocortisone, 0.5% novocaine solution, lasix and an antibacterial drug into the interspinous spaces of the cervical and upper thoracic regions spine, which, in combination with surgery, allows for improving its outcome while reducing the time required for postoperative treatment.

In laryngeal diseases, regional lymphotropic therapy as an independent method of conservative treatment in otolaryngology is still rarely used. However, the significant positive results of clinical developments in this area include the use of regional lymphotropic therapy for prophylactic purposes. The method is used to reduce the frequency and severity of post-intubation laryngeal complications in young children with prolonged tracheal intubation.

Starting from the first day of intubation, daily for 5-6 days, using the method of low-frequency ultraphonophoresis, an aqueous solution of tienam (imipenem/sodium cylastine) and 32 U of lidase in 0.25% novocaine is introduced into the projection area of the larynx and its regional lymph nodes along the anterior edge of the upper and middle thirds of the sternocleidomastoid muscles. The use of the developed method of laryngeal protection allowed the author to reduce the

incidence by 3 times and shorten the duration of acute post-intubation laryngitis by half, and reduce the likelihood of chronic post-intubation stenosis of the larynx.

Conclusion. From the presented information it follows that the issues of treating patients by influencing the lymphatic system or through it, on tissues and organs resuscitation methods have been developed gradually over the past 30 years. Research aimed at developing regional lymphotropic therapy methods prevails. At present, they are considered as effective methods for stopping various forms of inflammatory pathology of the paranasal, oral region and upper respiratory tract. Endolymphatic (systemic) therapy methods are not yet widely used, they are used much less frequently and in a small number of patients. Both directions require further research and the search for new technical developments, since today the potential for resuscitation cases where they could find application is far from exhausted.

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DIAGNOSIS AND TREATMENT OF PURULENT-SEPTIC COMPLICATIONS OF CATHETERIZATION OF THE SUBCLAVIAN VEIN (LITERATURE REVIEW)

Annotation:*The problem of diagnostics and treatment of purulent-septic complications of subclavian vein catheterization has long attracted the attention of surgeons, anesthesiologists-resuscitators and specialists in surgical infections. The frequency of development of these complications, according to various authors, is very variable and fluctuates from 0.07% to 17.5%. According to the National Nosocomial Infection Surveillance, about 200 thousand cases of infection associated with the use of subclavian catheters are registered in the USA annually (NNIS System Report, 1998). In Russia and, in particular, in St. Petersburg, bacteremia is detected in 9.3% of patients with subclavian catheters.*

Keywords:*purulent-septic complications, diagnostics, catheterization of the subclavian vein.*

Clinical picture, diagnostics and prevention of purulent-septic complications that developed after the introduction of the subclavian catheterblack grouse.

Microorganisms that cause catheter-associated infections most often enter the bloodstream from the skin at the site of catheter insertion. They migrate from the skin surface of the insertion sitecatheter along its outer surface, colonizing the distal end and thrombi located in the lumen of the vessel. Thus, a septic focus is formed. Its localization directly in the bloodstream determines the pathogenetic essence, clinical picture and prognosis of the disease.

The first sign of local manifestation of the inflammatory process in the catheterized vein, which subsequently leads to generalization of the infection, is the appearance of pain along the vein during infusion. Then complaints of pain in the neck area on the side of catheterization, swelling and cyanosis of the upper limb, and dilation of the subcutaneous veins of this area arise. Edema of the upper limb and neck on the side of catheterization develops [2]. Inflammatory edema may occur in the area where the catheter is located, hyperemia and purulent discharge may appear through the catheter wound when pressing on the area of insertion of the cavacatheter [2].

In the development of thrombosis of the internal jugular vein, in addition to swelling and pain in the neck, patients report pain when swallowing. The jugular vein is palpated as a dense, painful cord, often visible to the eye [4].

At the same time, colonization of the catheter (especially by representatives of the skin microflora) can often occur without clinically expressed symptoms, which is associated with the low virulence of such pathogens [5].

With the development of a primary lesion in the internal jugular vein due to the migration of a subclavian catheter there, together with the clinical picture of thrombosis of the subclavian vein, a picture of infiltration develops, and then deep phlegmon of the neck, which was described by V.F. Voyno-Yasenetsky in 1956 as the so-called “woody” phlegmon.

General clinical symptoms consist of signs of a systemic inflammatory response (SIRS): tachycardia (>90/min.), hyperventilation (RR>20/min.), blood leukocytosis (>12x109/l), fever (t>38°C) with further signs of sepsis as the complication progresses [6].

Clinically, angiogenic sepsis (catheter-associated sepsis) manifests itself with symptoms of sepsis of any other genesis, but at the same time has some features. A characteristic feature is the coincidence in time of periods of temperature rise with intravenous administration of drugs [5].

M.I. Lytkin, N.N. Shikhverdiev (2017), based on their own observations (142 cases), identify the following criteria for a justifiedestablishing the diagnosis of angiogenic sepsis:

1. localization of the source of infection in the vascular bed

2. the presence of clinical and laboratory signs of sepsis: fever with chills and increased sweating, especially after intravenous and intra-arterial infusions, signs of intoxication, the presence of metastatic purulent foci, progressive deterioration of the condition, leukocytosis with a shift in the formula to the left, lymphopenia, anemia, hypoproteinemia, manifestation of insufficiency of certain organs or systems; discrepancy between local signs of infection and the general reaction of the bodynism, disappearance of clinical manifestations and normalization of laboratory parameters after removal of the catheter;

3. Presence of bacteremia.

If the blood culture data are negative, it should be borne in mind that bacteremia cannot be constant due to the bactericidal properties of the blood and the partially preserved ability of the body to limit the source of infection. A breakthrough of the infection into the bloodstream is usually accompanied by hyperthermia, and blood sampling for culture should be done precisely at the height of the fever (Lytkin M.I., Shpkhverdiev N.N., 2017; Schwartz N.S., Nguyen DC, 2009). V.A. Gologorsky and co-authors (2018) consider the identity of the microflora cultured from the catheter and blood in the presence of clinical signs of a generalized infectious process to be a prerequisite for diagnosing angiogenic sepsis.

Currently, a point assessment of the severity of violation of thoseor other organs and systems in sepsis. Among the simplest and most common are the SOFA (Sepsis Oriented Failure Assessment) scale and the MODS (Multiple Organs

Dysfunction Score). The SOFA scale was developed by JLVincent in 2006 and adopted by the European Society of Intensive Care Medicine (ESIM). The scale is very easy to use and is available to almost any hospital with a biochemical laboratory (Kostyuchenko A.L. et al., 2016). It is used to assess the severity of organ dysfunction, which allows one to objectively identify a group of patients with severe sepsis and describe developing disorders. To assess the severity of the condition at a specific point in time, the APACHE II (Acute Physiological and Chronic Health Estimation II) scale is most often used (Kostyuchenko A.L. et al., 2016; Beloborodov V.B., 2012; Gelfand B.R. et al., 2013).

Methods for diagnosing purulent-septic complications of subclavian vein catheterization primarily involve assessing clinical manifestations, carefully examining the catheterization site, upper limb, and neck on the side of catheterization. Measurement of central venous pressure is of great diagnostic importance for diagnosing vein thrombosis (Portnoy M.V., 2018; Stoyko Yu.M. et al., 2012; Sanders RJ, Haug S, 2018; Ena J. et al., 2018).

A modern method for diagnosing subclavian vein obstructions is ultrasound. The advantage of ultrasound diagnostics is its ease of use, non-invasiveness, and the possibility of repeated use to assess the dynamics of the process [7,8,9].

The leading method for diagnosing venous thrombosis today is duplex angioscanning [10,11], which allows combining the ability to view (morphology information) with the definition of Doppler analysis (hemodynamic information). In the studies of GM Baxter et al. (2015), color Doppler ultrasound in the diagnosis of subclavian vein thrombosis had a sensitivity and specificity of 100% compared to the results of phlebography. Other authors note that ultrasound methods of examination can often give false results in the diagnosis of subclavian vein obstruction [12,6]. MB Grinev et al. (2010) indicate the great diagnostic value of ultrasound methods of examination in the diagnosis of infiltrates, abscesses and phlegmons in the area ofsubclavian catheter.

When conducting an ultrasound examination of catheterized veins with developed thrombosis, the acute stage of the process is characterized by a homogeneous, hypo- or anechoic thrombus structure, while the subacute stage and the stage of post-thrombotic disease are characterized by a heterogeneous structure with the presence of areas of both low and high echogenicity in the structure [7,13].

Contrast phlebography, according to Yu. M. Stoyko et al. (2012), is the "gold standard" for diagnosing venous pathology. Phlebography allows one to determine the localization and extent of thrombosis, the degree of development of collateral blood outflow pathways, the degree of thrombus recanalization, and the severity of post-thrombotic changes in the veins. However, according to R. Z. Losev (2010), the accuracy of the ultrasound method is 95%, compared to phlebographic data, and its speed, non-invasiveness, absence of complications and contraindications for implementation, the possibility of monitoring control make ultrasound usefollowing one of the leading methods of diagnosing venous thrombosis.

For successful diagnosis of purulent-septic complications of subclavian vein catheterization, scintigraphy, rheovasography, and nuclear magnetic resonance can be used [6,9,14,15,16].

Microbiological examination of the removed catheter and blood is extremely important for establishing the etiology of the developedcomplications and their adequate treatment.

With strict requirements for proper material collection and the use of modern microbiological techniques, positive blood culture in sepsis is observed in 80-90% of cases [17]. The method of catheter tip seeding (rolling it over a dense nutrient medium), described by DG Maki et al. in 2017, is used by many authors to determine the contamination of the outer surface of the catheter [17]. The frequency of flora seeding from the catheter tip ranges from 26% to 43%. X. Lode (2018), G. Ferretti et al. (2013) suggest conducting quantitative microbiological studies - the number of colonies isolated from a blood sample taken through a catheter should be five times higher than that isolated from a simultaneously taken peripheral blood sample. For a more complete seeding of the internal contents of the catheter, it is proposed to use special brushes, followed by centrifugation and staining of the leukocyte sediment with acridine orange. According to X. Lode (2018), in patients receiving total parenteral nutrition, this method had a sensitivity of 95% and a specificity of 84%.

Bacteriological diagnostics of catheter septicemia requires multiple cultures of peripheral blood, both venous and arterial. If a catheter infection is suspected, blood from the catheter and an intact peripheral vein must be cultured. A positive result is the isolation of identical pathogens [17,18,19,20].

Yakovlev SV (2010) suggests the following rules for conducting adequate microbiological diagnostics of catheter infection and sepsisa:

1. Blood for testing should be collected before antibiotics are prescribed. If the patient is already receiving antibacterial therapy, then, if possible, antibiotics should be discontinued for at least 24 hours, after which blood should be collected. In cases where it is impossible to discontinue antibiotics, blood should be collected immediately before the nextby administering the drug.

2. The minimum required sampling is two samples taken from different hands at 30-minute intervals. The optimal sampling is three blood samples, which significantly increases the detection of the pathogen. Studies have shown that a larger number of samples has no advantages over three-fold sampling in terms of the frequency of detection of pathogens.

3. Blood for testing should be taken from a peripheral vein. No advantages have been shown for taking blood from an artery.

If catheter-associated sepsis is suspected, quantitative bacteriological examination of blood obtained from an intact peripheral vein and through the suspect catheter should be performed. If the same microorganism is isolated from both samples, and the quantitative ratio of the bacterial count of the catheter and vein samples is equal to or greater than 5, then the catheter is most likely the source of sepsis. The sensitivity of this diagnostic method is more than 80%, andspecificity reaches 100%.

4. It is more optimal to use standard special vials with ready-made nutrient media, rather than vials with nutrient media sealed with cotton-gauze stoppers prepared in the laboratory. Firstly, laboratory-prepared media are not sufficiently standardized and the frequency of isolation of microorganisms from blood when using them is significantly

lower. Secondly, when opening the vial and introducing a blood sample from a syringe, there is a risk of contamination of the nutrient medium with air microflora. In addition, negative pressure is created in commercial vials, which ensures the flow of a strictly defined amount of blood without contact with the environment when using a transition system with needles onopposite ends of the catheter.

5. Blood sampling from a peripheral vein should be performed with strict aseptic technique. The skin at the site of venipuncture is treated with a solution of iodine or povidone-iodine with concentric movements from the center to the periphery for at least 1 min. Immediately before sampling, the skin is treated with 70% alcohol. Sterile gloves are used when performing venipuncture. The cap of the vial with the medium is treatedalcohol. For each sample, 10 ml of blood is taken.

Careful processing of the skin, vial caps and the use of special blood collection systems with an adapter can reduce the degree of sample contamination to 3% or less [21,22].

An important stage in the development of measures to prevent catheter-associated infections was the generalization of global experience in prevention methods in the form of Recommendations issued in 2016 in the United States [23]. In 2017, therevised and supplemented Guidelines for the prevention of infections associated with vascular catheterization [1]. The Guidelines contain new and systematize already known data on prevention methods. They can be divided into the following groupspy:

1. Hand treatment and aseptic technique.

Effective hand treatment is achieved by using anhydrous alcohol-based products or antibacterial soap and then rinsing off the soap with water. It is necessary to use the maximum amount of asepsis: a cap, a mask, a sterile gown, sterile gloves andwide processing of the surgical field.

2. Leather processing.

Povidone-iodine is the most commonly used antiseptic for treating the skin in the area of central venous catheterization.

3. Dressings for the catheterization area.

Transparent semipermeable dressings are becoming popular for covering the catheter site. They are safe for catheters and allow visual inspection of the catheter site. Catheter colonization with transparent dressings (5.7%) was comparable to gauze dressings (4.6%), with no clinically significant differences between the differentdevelopment of thrombophlebitis.

4. Fixation of the catheter.

Sutureless catheterization has its advantages over suturing a catheter in terms of preventing catheter infection.

5. Bacterial filters.

Bacterial filters have been shown to be effective in reducing the incidence of phlebitis in peripheral venous catheters, but there is no evidence that they improve the effectiveness of preventing catheter-related infection. Therefore,their use is not recommended.

6. Catheters and cuffs impregnated with antibiotics and antisepticstics.

All studies of impregnated catheters were conducted on uncuffed triple-lumen catheters in adults with a duration of catheterization of less than 30 days. Impregnation of the outer and inner surfaces of the catheter with minocycline/rifampicin was found to reduce the incidence of catheter-associated infection compared with catheters coated on the outer surface with chlorhexidine/silver sulfadiazine. Benefits were observed after the 6th day of catheterization, but were absent after 30 days. The use of catheters with cuffs coated with platinum/silver ions has been described. However, the use of catheters impregnated with antibiotics and antiseptics should be accompanied by all preventive measures.

7. Prophylactic use of antibiotics.

To date, there are no studies demonstrating a reduction in the incidence of catheter-associated infection with oral or paenteral administration of antibiotics.

8.Ointments containing antibiotics and antiseptics.

The use of ointments containing antibiotics and antiseptics on the catheterization area to reduce the incidence of catheter-associated infection has the most contradictory data. A clear reduction in catheter colonization was not obtained. S. Danchaivijitr, R. Theeralharathom (2012) conducted a study aimed at studying the colonization of catheters when using chlorhexidine ointment, ointment containing iodophor, and alcohol dressings in 150 patients with central catheters. The study showed that the frequency of catheter colonization in patients who used alcohol dressings was 22.7% less than in patients who used ointments with chlorhexidine and iodophor.

9. Prophylactic filling of the catheter with an antibiotic solution.

For the prevention of catheter-associated infection during periods

During the time when the catheter was not in use, its lumen was filled with solutions of antibiotics and anticoagulants, but their effectiveness was not provenon.

10.Anticoagulants.

Anticoagulant solutions are widely used to prevent catheter thrombosis. When heparin (3 U/ml in solution, 5000 U every 6 or 12 hours or 2500 U low molecular weight heparin subcutaneously) was used in patients with short-term central venous catheterization, the risk of catheter thrombosis was reduced, but no significant differences in the incidence of catheter-associated infection were found.

11.Repositioning catheters.

Replacing catheters on a schedule (every 3-7 days) to reduce the incidence of catheter-associated infection was ineffective.

12.Replacement of transfusion systems.

The optimal interval for changing intravenous transfusion systems is 96 hours. In the case of infusions of fluids with an increased probability of contamination by microorganisms (fat emulsions, blood),more frequent replacement of systems is indicated. Additional ports with taps (for drug administration, blood sampling) represent a potential hazard for the introduction of microorganisms into the catheter, vessels, infusion fluids (contamination of taps accounts for 45-50% of cases). However, is such contamination a source of catheter-associated infection?infections, not yet proven.

F. Parras et al. (2014) cite data from a study conducted among 500 patients who had a subclavian catheter inserted and were exposed to a “mandatory program” that included methods for careful prevention of catheter infection. The incidence of phlebitis

decreased by 1% (from 15 to 14%), colonization of the internal and external surfaces of the catheter by 1% (from 12 to 11% and from 2 to 1%). According to AF Widmer (2014), the use of a mandatory protocol of profillactic acid can reduce the incidence of catheter infections by 40% - 50%. AM Cazalla Foncueva et al. (2013) also describe a reduction in the incidence of catheter infections with strict adherence to the prevention protocol.

According to the US Centers for Disease Control, special preventive measures over a 4-year period have reduced the incidence of catheter infections in Pennsylvania hospitals by 67% [24].

There are also other studies devoted to the prevention of purulent-septic complications of cava catheterization [25,26,27,28,29].

Modern principles of treatment of patients with purulent-septiccomplications of cavacatheterization.

Treatment of purulent-septic complications of subclavian catheterizationvein is not unambiguous. Depending on the form of the complication and the severity of the patient's condition, it can be either conservative oroperational.

According to the majority of researchers, the basic treatment regimen for patients with purulent-septic complications of subclavian vein catheterization should include the following set of treatment measures: 1) sanitization of the septic focus; 2) antibacterial therapy; 3) improvement of the rheological properties of the blood; 4) correction of immune response disorders; 5) normalization of the functioning of the body's main life support systems [1,14,30].

The need to eliminate the primary septic focus is recognized by all authors. Since the source of infection is the subclavian catheter, it is removed and, if necessary, catheterization of a vein of another localization is performed [1]. In case of phlegmon of the subclavian region, the abscess is opened and drained.

There is no single treatment tactic for patients with central vein thrombophlebitis in the literature. Some authors believe that thrombi must be removed from the vein [9,22]; others believe that in this complication it is sufficient to ligate the vein, while others recommend conservative therapy.and only if treatment is ineffective, resort to surgery, BA Pruitt et al., (2016) believe that if the patient's condition worsens and septicemia occurs within 24 hours after catheter removal and the start of conservative therapy, it is necessary to perform surgical removal of the affected peripheral vein, while the issue of operations on the central veins is not considered. E.S. Baimyshev et al. (2018) describe the only case of surgical intervention on the subclavian vein with a favorable outcome. Moreover, after taking the vein on the tourniquet, it was opened and the thrombus was removed using a catheter and partially washed out with novocaine retrogradely. RN Garrison et al. (2012) cite the experience of surgical treatment of 35 patients over 6 years with purulent thrombophlebitis, which caused sepsis, as a result of catheterization of peripheral veins. The veins were excised, which led to rapid regression of sepsis symptoms. RE Winn et al. (2018) demonstrate a case of surgical treatment of purulent thrombophlebitis of the subclavian vein - its ligation with excision of a section behindfilled with blood clots.

The first thrombectomy from the internal jugular vein for otogenic sinusthrombosis and internal jugular vein thrombosis was performed by M. Chiray and G. Semelaigne in 1922. After opening the lumen of the vein, the authors used a syringe with a thick needle to remove blood clots. In Russia, the technique of surgery to remove thrombotic masses in internal jugular vein thrombosis was described and applied by A.N. Bakulev et al. in 2018. Access to the vein was carried out through a longitudinal incision along the anterior edge of the sternocleidomastoid muscle. Since the 1970s, with the development of thrombosis or thrombophlebitis of the internal jugular vein,veins with phlegmon of the vascular bundle of the neck, many authors recommend widely opening the phlegmon and ligating the vein without opening its lumen and removing blood clots.

The most important component of complex therapy of purulent-septic complications of subclavian vein catheterization are antimicrobial agents. In this case, targeted and adequate antibacterial therapy is carried out with broad-spectrum antibiotics that have a bactericidal effect on the maximum number of potential pathogens [1,30].

Early use of antibacterial therapy reduces the risk of death. In case of inadequate antibiotic therapy, mortality increases significantly. Thus, according to N.V. Zavad et al. (2013), survival in septic shock in patients who received inadequate antibiotic therapyantibiotic therapy did not exceed 20%.

M. Antonelli et al. (2010) suggest using a de-escalation therapy regimen. The principle of the method is to use drugs or combinations characterized by an ultra-broad spectrum of action, to which the probable pathogens have minimal resistance. De-escalation therapy involves an active search for the infectious agent. After its isolation and assessment of sensitivity, a transition is madefor targeted therapy.

According to the Kaluga Conference of the Russian Academy of Agricultural Sciences (2014), when isolating oxacillin-sensitive strains of Staphylococcus aureus and Staphylococcus epidermidis in patients with sepsis against the background of a catheter-associated infection, it is recommended to use oxacillin and cefazolin as first-line antibiotics. If the specified pathogens are not sensitive to oxacillin, then vancomycin with linezolid should be used.

According to WF Ehni et al. (2012); A.L. Kostyuchenko et al. (2016); V.A., Rudnov (2012); S.V. Yakovlev (2015), in cases of clinically clear or ultrasound-visualized phlebothrombosis, an antistaphylococcal drug (protected amoxicillin, rifampicin, glycopeptide antibiotic) should be a mandatory component of treatment.

The duration of antimicrobial therapy should be significant - 17-20 days, since a short course creates the risk of developing an angiogenic generalized infection, for example, in the form of endocarditis. In the absence of signs of thrombophlebitis, the pathogen is eradicated using antipseudomonal antibiotics (ceftazidime, cefopirazone, ceftriaxone).

The basis of drug therapy for acute phlebothrombosis is currently the use of anticoagulants (including low-molecular fractionated heparins), inhibitors of the synthesis of vitamin K-dependent coagulation factors (coumarins), inhibitors of platelet function (aspirin, plavix, rheopolyglucin), and thrombolysis activators. The main component of such therapy is heparins, which stop the growth of platelets and stimulate natural recanalization of veins [15].

In most patients with thrombosis and thrombophlebitis of the catheterized vein and its tributaries, unfractionated heparin is used [10]. After a single intravenous injection of 5 thousand U, the patient is given heparin subcutaneously after 6-12 hours at an average daily dose of 500 U/kg of body weight, but no more than 20-30 thousand U of heparin per day for 5-7 days. Subsequently, patients are transferred to indirect anticoagulants (warfarin).

The standard heparin treatment regimen has a number of disadvantages, since this drug is difficult to dose, requires frequent administration or long-term infusions, constant laboratory monitoring and has side effects (leads to the development of hematomas, heparin thrombocytopenia, osteoporosis, etc.). In recent years, conventional heparin has been gradually replaced by low-molecular heparins (fraxiparin, clexane, etc.), which are free from the above-mentioned disadvantages. Their dosage is calculated individually.

Some authors, touching upon the treatment of subclavian vein thrombosis, speak of the need for more "aggressive" therapy, i.e. the use of fibrinolytic drugs [9]. However, a large number of complications of thrombolytics and, as a consequence, a wide range of contraindications to their use (recent surgery or injury - less than 1 month, hemorrhagic conditions, pregnancy, brain diseases, more than 7 days from the onset of thrombosis, etc.) significantly limit their use. The benefit/risk ratio when using thrombolytics has no advantages over heparin therapy.

The objectives of immunocorrective therapy for catheter-associated infection are: 1) neutralization of infectious agents and their toxins; 2) modulation of the activity of macrophages, granulocytes, lymphocytes and platelets; 3) modulation of the synthesis and excretion of pro- and anti-inflammatory cytokines; 4) correction of manifestations of the systemic inflammatory response to prevent the development of multiple organ failure.awns.

Studies conducted in the treatment of patients with sepsis show that the use of pentoxifylline, immunoglobulins G and M helps to reduce mortality; and the use of small doses of corticosteroids leads to stabilization of hemodynamics.

One of the mandatory elements of treatment of patients with purulent-septic complications of cavacatheterization is the normalization of the functioning of the main life support systems against the background of well-imposed enteral and parenteral nutrition. This includes complex infusion-transfusion therapy, the fight against hypoxia, normalization of all types of metabolism, tissue metabolism, the function of parenchymatous organs, etc. [6,10,22,29].

The results of treatment of patients depend on many circumstances: the underlying and concomitant diseases, the nature of purulent-septic complications of cavacatheterization, the type of surgery, etc. There are few data on the successful treatment of patients. However, most authors consider the results of treatment of these patients unsatisfactory. Mortality in the development of purulent-septic complications of cavacatheterization, in particular, in severe sepsis, reaches high figures - 50-80% [17]. In America, bloodstream infections are among the top ten diseases leading as a cause of death (NNIS System Report, 2014).

Conclusion. Analysis of literature data shows that despite the great advances in surgery and anesthesiology, purulent-septic complications are difficult to diagnose

complications of subclavian vein catheterization. Information on the results of treatment of these complications is ambiguous and contradictory. Existing generally accepted methods of prevention and surgical treatment are not effective enough. The study of the features of diagnosis, prevention and treatment of purulent-septic complications of subclavian vein catheterization is of current interest.scientific problem.

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OSHQON VA DUODENAL ARTERYALARNING TARMOQLI HAVZULARINING PLASTIKLIGINI TAJRIBDA O‘RGANISH UCHUN

Annotatsiya: *Maqolada tajribada itning asosiy oshqozon arteriyalarining tarmoqlanish zonalarini aniqlash o'rganiladi. Asosiy me'da arteriyalarining terminal shoxlari o'rtasida ko'p sonli intraorgan anastomozlariga qaramasdan, har bir asosiy arteriyaning o'ziga xos shoxlanish zonasi mavjud bo'lib, bu erda qon aylanishi odatda ushbu arteriya tomonidan amalga oshiriladi.*

Kalit so'zlar: *it, o'simta, hujayra, asosiy arteriyalar, o'n ikki barmoqli ichak, tomir, oshqozon, indigo karmin, eritma, kimyoterapiya, angiogramma.*

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TO STUDY THE PLASTICITY OF BRANCHING POOLS OF THE STOMACH AND DUODENUM ARTERIES IN THE EXPERIMENT

Abstract: *The article studies the detection of branching zones of the main gastric arteries of a dog in an experiment. Despite the large number of intraorgan anastomoses between the terminal branches of the main gastric arteries, each main artery has its own branching zone, where blood circulation is normally carried out by this artery.*

Keywords: *dog, tumor, cell, main arteries, duodenum, vessel, stomach, indigo carmine, solution, chemotherapy, angiogram.*

Kirish. Hozirgi vaqtda bosh, tanasi va oyoq-qo‘llarning asosiy arteriyalarini zondlash orqali turli joylashuvdagi o‘smalarga kimyoterapiya o‘tkazishga bag‘ishlangan ko‘plab ishlar mavjud [3]. So‘nggi yillarda xususan, qorin bo‘shlig‘i a’zolaridagi o‘smalar kimyoterapiyasi muammosi, mintaqaviy infuziya va perfuziya yo‘li bilan klinisyenlar va eksperimentatorlarning e’tiborini jalb qilmoqda [1]. Dori moddalarini o‘smali hujayra yoki yallig‘lanish o‘chag‘i bilan bevosita aloqa qiladigan qon oqimiga yuqori konsentratsiyada yetkazish uchun zararlangan hududga qon yetkazib beruvchi arteriyaga kiritish imkonini beradi [2]. Mintaqaviy infuziya va perfuziya usulining rivojlanishi to‘g‘ridan-to‘g‘ri qon tomirlarining tarqalish havzalari, ularni izolyatsiya qilish imkoniyatlari va perfuzatning sizib

chiqishini oldini olish bilan bog‘liq. Ayrim a’zolar bo‘yicha bunday tadqiqotlar olib borilmoqda [4,5]. Ammo oshqozon va 12-barmoq ichakning asosiy arteriyalari tarqalish zonalarini hayot davomida o‘rganishga bag‘ishlangan tadqiqotlar juda kam va bir-biriga ziddir.

Tadqiqot maqsadi. Biz eksperimentda oshqozon va 12-barmoq ichak arteriyalari tarqalish havzalarining plastikligini o‘rgandik.

Tadqiqot materiallari va usullari. Tadqiqot materiali sifatida dastlab 5 ta sog‘lom oshqozon va 12-barmoq ichakning angiogrammalarida ushbu a’zolar arteriyalarining tarqalish havzalari o‘rganildi. Keyinchalik, 18 ta itda hayot davomida oshqozon va 12-barmoq ichakning alohida arteriyalari tarqalish zonasi 5% indigokarmin eritmasini har bir arteriyaga alohida kiritish yo‘li bilan aniqlandi. O‘tkir va surunkali eksperimentlar natijalari 5 ta itning normal holatdagi oshqozon va 12-barmoq ichakning o‘limdan keyingi angiogrammalari bilan solishtirildi. Oshqozon va 12-barmoq ichakning muayyan tomirlariga 5% indigokarmin eritmasi kiritilganda, tadqiqotdagi a’zoning qon aylanishi asosan shu tomir tomonidan ta’minlanadigan hududi eritma bilan bo‘yaldi. Oshqozon va 12-barmoq ichakning asosiy tomirlarining tarqalish havzalari boshqa arteriyalar va venalar saqlangan holda o‘rganildi, bu esa tabiiy ravishda kiritilgan indigokarminga qarshi turdi va uning tarqalishini tabiiy chegaralar bilan chekladi. Oshqozonning asosiy arteriyalari tarqalish zonalarini aniqlash uchun itlarda indigokarmin eritmasi quyidagicha kiritildi: chap oshqozon arteriyasiga – 4 ta itda, chap oshqozon-selanka arteriyasiga – 4 ta itda, o‘ng oshqozon arteriyasiga – 3 ta itda, o‘ng oshqozon-selanka arteriyasiga – 4 ta itda. 12-barmoq ichakning kranial pankreatik-12-barmoq ichak arteriyasiga eritma 6 ta itda, kaudal pankreatik-12-barmoq ichak arteriyasiga – 6 ta itda va kranial mezenterik arteriyaning ikkinchi shoxchasiga – 6 ta itda kiritildi. Operatsiyadan so‘ng itlar hayotda saqlanib qoldi. Chap oshqozon arteriyasiga 5% indigokarmin eritmasi kiritilganda eritma kardia hududini, qisman oshqozon tubini, kichik egri chiziqni va kichik selankani pilorik qismgacha bo‘yadi, shuningdek, oshqozonning old va orqa devorlarining uchdan ikki qismini qamrab oldi.

Tadqiqot natijalari. O‘ng oshqozon arteriyasiga indigokarmin eritmasi kiritilganda eritma asosan oshqozonning pilorik qismiga, kichik egri chiziq tarafidan, a’zoning old va orqa devorlarini qamrab tarqaldi. O‘ng oshqozon-selanka arteriyasiga kiritilgan eritma oshqozonning katta egri chiziq bo‘ylab, 12-barmoq ichakning boshlang‘ich qismidan oshqozon tanasining pilorik qismga o‘tadigan joyigacha tarqaldi, a’zoning old va orqa devorlarini va katta selankaning o‘ng yarmini qamrab oldi. Oshqozon tubini qon bilan ta’minlaydigan qisqa arteriyalarning kichik kalibrli bo‘lishi sababli, indigokarmin eritmasi taloq arteriyasiga kiritildi. Eritma kiritilishidan oldin taloq arteriyasi taloq darvozalarida bog‘landi. Bunda indigokarmin eritmasi oshqozon tubiga yetib bordi, a’zoning old va orqa yuzalarining uchdan bir qismini va katta selankaning chap yarmini qamrab, oshqozon tanasining pilorik qismga o‘tadigan joyigacha yetdi.

Shunday qilib, oshqozonning asosiy arteriyalarining oxirgi shoxlari o‘rtasida ko‘plab intra-a’zo anastamozlari mavjud bo‘lsa-da, har bir asosiy arteriya o‘ziga xos tarqalish zonasiga ega bo‘lib, unda normal sharoitda qon aylanishi ushbu arteriya

tomonidan amalga oshiriladi. Oshqozonning asosiy arteriyasi bir necha marta shoxlanib, “oxirgi” arteriyalar tarmog‘ini hosil qiladi, ularda qon odatda kam aralashadi. Har bir asosiy oshqozon arteriyasidan qon asosan ushbu arteriyaning tarqalish zonasiga kiradi. Oshqozonning asosiy arteriyalari tar briefs qalish zonasida qonning aralashmasligi odatda arteriyalarning shoxlanishlarida bosimning taxminan bir xil bo‘lishi bilan izohlanadi. Oshqozon shilliq qavati qon tomirlari tarmog‘ida asosiy arteriyalar tarqalish havzalari o‘rtasida eng ko‘p anastamozlar mavjud bo‘lgan hududlar odatda qo‘shni qon ta’minoti zonasi deb ataladi. Qo‘shni qon ta’minoti zonasi har doim indigokarmin eritmasi bilan bo‘yaldi, qaysi arteriyaga eritma kiritilganidan qat’i nazar. Eksperiment natijalarini oshqozonning o‘limdan keyingi angiogrammalari bilan solishtirish a’zo devoridagi qon aylanishining zonaliligini tasdiqlaydi, bu bir nechta qon ta’minoti manbalari mavjudligi bilan bog‘liq. Oshqozonning asosiy arteriyalarining oxirgi shoxlari o‘rtasidagi ko‘plab arterial anastamozlarning mavjudligi ekstr-a’zo bo‘limlari o‘chirilgandan so‘ng bir arteriyadan saqlanib qolgan asosiy arteriyalar tarqalish havzalariga tez kollateral qon oqimining kirishi uchun optimal sharoit yaratadi.

Xulosa. 12-barmoq ichakning asosiy arteriyalariga hayot davomida indigokarmin eritmasi in’ektsiyasi natijalari va ularning o‘limdan keyingi angiogrammalar bilan solishtirilishi shuni ko‘rsatadiki, 12-barmoq ichakning har bir arteriyasi normal sharoitda qon aylanishini ta’minlaydigan o‘ziga xos tarqalish zonasiga ega. Oshqozon va 12-barmoq ichakning asosiy arteriyalaridan biriga dori moddasini kiritish orqali uning oshqozon va 12-barmoq ichak devorlari bo‘ylab teng taqsimlanishiga erishib bo‘lmaydi. Ushbu a’zolarning har bir asosiy arteriyasi qon oqimi asosan ushbu arteriya tomonidan amalga oshiriladigan o‘ziga xos tarqalish zonasiga ega.

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INNOVATIVE EDUCATIONAL TECHNOLOGIES IN MATHEMATICS LESSONS (ON THE EXAMPLE OF SINGAPORE EDUCATION)

Abstract:*This article analyzes the application and effectiveness of innovative educational technologies in mathematics lessons. With the development of the educational system, in addition to traditional methods, the need for the introduction of new pedagogical Technologies is increasing. Innovative educational technologies, including digital tools, interactive educational platforms, simulations and games, help to make the process of teaching mathematics effective and interesting. This article will give examples of how innovative technologies can be used to develop students ' mathematical thinking and problem-solving skills. The lesson also examines the possibilities of ensuring an individual approach of students through the use of technology, increasing their motivation and improving the quality of the educational process. The article provides recommendations for effective application of innovative technologies for mathematics teachers and analyzes what changes these approaches can lead to in the educational system.*

Key words: *keywords: Singapore education, innovative education technologies, interactive education methods, Digital Learning Resources, Singapore education system, application of Technology in the learning process, Phet Colorado.*

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MATEMATIKA DARSLARIDA INNOVATSION TA’LIM TEXNOLOGIYALARI (SINGAPUR TA’LIMI MISOLIDA)

Annotatsiya:*Ushbu maqolada matematika darslarida innovatsion ta’lim texnologiyalarining qo‘llanilishi va uning samaradorligi tahlil qilinadi. Ta’lim tizimining rivojlanishi bilan birga, an’anaviy usullardan tashqari, yangi pedagogik texnologiyalarni joriy etish zarurati ortmoqda. Innovatsion ta’lim texnologiyalari, jumladan, raqamli vositalar, interaktiv ta’lim platformalari, simulyatsiyalar va o‘yinlar, matematika o‘qitish jarayonini samarali va qiziqarli qilishga yordam beradi. Mazkur maqolada, o‘quvchilarning matematik fikrlash va muammolarni hal qilish qobiliyatlarini rivojlantirish uchun innovatsion texnologiyalardan qanday foydalanish mumkinligi haqida misollar keltiriladi. Shuningdek, darsda texnologiyalardan foydalanish orqali o‘quvchilarning individual yondashuvini ta’minlash, ularning motivatsiyasini oshirish va o‘quv jarayonining sifatini*

yaxshilash imkoniyatlari ko‘rib chiqiladi. Maqolada, matematika o‘qituvchilari uchun innovatsion texnologiyalarni samarali tarzda qo‘llash bo‘yicha tavsiyalar beriladi hamda bu yondashuvlarning ta’lim tizimida qanday o‘zgarishlarga olib kelishi mumkinligi tahlil qilinadi.

Kalit so‘zlar: *Singapur ta’limi, Innovatsion ta’lim texnologiyalari, Interaktiv ta’lim usullari, Raqamli o‘quv resurslari, Singapur ta’lim tizimi, O‘quv jarayonida texnologiyalarning qo‘llanilishi, Phet Colorado.*

Kirish. Hozirgi kunda ta'lim tizimida innovatsion yondashuvlar va texnologiyalarni qo‘llash ta’lim sifatini oshirish va o‘quvchilarni zamonaviy talablar darajasida tayyorlashda muhim rol o‘ynaydi. Ayniqsa, matematikani o‘qitishda ilg‘or ta’lim texnologiyalarini joriy etish o‘quvchilarni nafaqat nazariy bilimlar bilan ta'minlash, balki ularda analitik fikrlash va muammolarni hal qilish qobiliyatlarini rivojlantirishga imkon beradi. Singapur ta’lim tizimi o‘zining innovatsion yondashuvlari bilan dunyo bo‘ylab tanilgan. Ushbu tizimda matematikani o‘qitishda zamonaviy texnologiyalar va metodikalarni qo‘llash orqali o‘quvchilarni yuqori darajada bilim olishga undaydi. Singapurda matematikani o‘qitishda interaktiv texnologiyalar, raqamli resurslar va boshqa ilg‘or metodikalar samarali qo‘llaniladi, bu esa o‘quvchilarning darslarga bo‘lgan qiziqishini oshirib, matematikada yuqori natijalarga erishishlariga yordam beradi. Mazkur maqolada, Singapur ta’lim tizimining innovatsion texnologiyalarini matematikani o‘qitishda qanday qo‘llanilishi va bu yondashuvlarning samaradorligi tahlil etiladi. Shuningdek, Singapur tajribasi asosida o‘zbek ta’lim tizimida matematikani o‘qitishni takomillashtirish uchun qanday choralar ko‘rilishi mumkinligi haqida fikrlar bildiriladi.

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Tan, H. W., & Chan, P. C. (2024). *Mathematics education in the digital age: The integration of artificial intelligence in Singapore classrooms*. Singapurda sun'iy intellektning matematikani o‘qitishda qanday qo‘llanilishi va o‘quvchilarning o‘qish jarayonini qanday yaxshilashiga oid tadqiqot.

Tadqiqod metodologiyasi. Tadqiqotning asosiy metodlaridan biri sifatida mavjud adabiyotlar va ilmiy ishlanmalar tahlil qilingan. Bu metod orqali matematikani o‘qitishda raqamli va innovatsion texnologiyalarni qo‘llashning jahon tajribasi o‘rganilgan. Singapur, Germaniya va Polsha kabi davlatlardagi ilg‘or amaliyotlar samaradorligi ko‘rib chiqildi.
Eksperimental metod: Tadqiqotda o‘quvchilarning matematikaga bo‘lgan qiziqishini oshirish va bilim olish samaradorligini aniqlash maqsadida eksperimental metod qo‘llanildi. Raqamli didaktik vositalar (masalan, interaktiv platformalar va mobil ilovalar) yordamida darslar o‘tkazilib, o‘quvchilarning o‘zlashtirish darajasi va motivatsiyasi kuzatildi. Eksperimentlar orqali o‘quvchilarning muvaffaqiyatlari tahlil qilindi va texnologiyalarni qo‘llashning

ta'limga ta'siri baholandi.

So‘rovnoma va intervyu: Tadqiqotda o‘qituvchilar va o‘quvchilardan so‘rovnomalar o‘tkazildi. So‘rovnomalar yordamida o‘quvchilarning ta'lim texnologiyalariga bo‘lgan munosabati, ularning darslarga bo‘lgan qiziqishi va o‘qituvchilarning raqamli vositalarni qo‘llashdagi tajribalari o‘rganildi. O‘qituvchilardan olingan intervyular orqali raqamli vositalarning ta'lim jarayonidagi samaradorligi va qiyinchiliklar to‘g‘risida fikrlar yig‘ildi.

Sifatli tahlil: Tadqiqotda o‘quvchilarning muvaffaqiyatlarini o‘lchash uchun kvantitativ tahlil usuli qo‘llanildi. Darslardagi o‘quvchilarning natijalari, test va sinovlar orqali o‘lchandi. Sifatli tahlil esa o‘quvchilarning interaktiv vositalar bilan ishlashda qanday his-tuyg‘ularga ega ekanliklari, o‘quvchilarning matematika darslariga bo‘lgan qiziqishi va o‘qituvchilarning pedagogik yondashuvlari haqida fikrlarni to‘plashni ko‘zda tutdi.

Vazifalar va ishning tahlili: Tadqiqotda o‘quvchilarga o‘qituvchilar tomonidan berilgan vazifalar asosida darslarning natijalari tahlil qilindi. Vazifalar yordamida o‘quvchilarning analitik fikrlash, muammolarni hal qilish va yangi bilimlarni qo‘llash qobiliyatlari o‘lchandi. Dars jarayonida interaktiv texnologiyalarning ishlash samaradorligi va ta'lim tizimiga qo‘shgan hissasi hamda o‘quvchilarning o‘rganish jarayonidagi ishtiroki baholandi.

Tadqiqot metodologiyasi matematikani o‘qitishda innovatsion texnologiyalarni qo‘llashning samaradorligini chuqur o‘rganish va o‘quvchilar, o‘qituvchilar hamda ta'lim tizimi uchun eng optimal usullarni aniqlashga qaratilgan. Bu metodlar yordamida raqamli texnologiyalarni ta'limda qanday samarali ishlatish mumkinligi va ularning matematikani o‘qitishda qanday ijobiy ta'sir ko‘rsatishini aniqlash maqsad qilindi.

Tahlil va natijalari.Tadqiqotning maqsadi matematika darslarida innovatsion ta'lim texnologiyalarini qo‘llashning samaradorligini baholash edi. Tadqiqot davomida o‘quvchilarning matematikaga bo‘lgan qiziqishi, bilim olish samaradorligi va ta'lim texnologiyalarining ta'lim jarayoniga ta'siri ko‘rib chiqildi. Tadqiqot natijalari quyidagi tahlillarni taqdim etdi:

Raqamli texnologiyalarning samaradorligi:

Tadqiqotda o‘tkazilgan eksperimentlar va testlar shuni ko‘rsatdiki, raqamli didaktik vositalar, xususan interaktiv platformalar va mobil ilovalar, o‘quvchilarning matematikaga bo‘lgan qiziqishini sezilarli darajada oshirgan. O‘quvchilar darslarga ko‘proq ishtirok etishgan va matematika darslarida murakkab masalalarni yechishda yanada ishtiyoqli bo‘lishgan. Raqamli texnologiyalar yordamida o‘quvchilar yangi tushunchalarni tezroq o‘zlashtirgan, shu bilan birga, o‘quvchilarning ijodiy va analitik fikrlash qobiliyatlari ham rivojlangan.

O‘quvchilarning muvaffaqiyatlari:

Tadqiqotda matematika fanidan o‘quvchilar tomonidan bajarilgan testlar va vazifalar tahlil qilindi. Natijalar shuni ko‘rsatadiki, texnologiyalarni qo‘llash orqali o‘quvchilar an’anaviy usullarga nisbatan yaxshiroq natijalarga erishgan. Testlarda o‘quvchilarning o‘rganish natijalari 15-20% ga yaxshilangan. Ayniqsa, masalalarni

yechishda onlayn platformalarda ishlash o‘quvchilarning mantiqiy fikrlash va muammolarni hal qilish ko‘nikmalarini oshirgan.

Motivatsiyaning oshishi:

O‘quvchilar bilan o‘tkazilgan so‘rovnomalarga ko‘ra, interaktiv texnologiyalar yordamida darslar o‘quvchilarda yuqori motivatsiya va faollikni yuzaga keltirgan. 75% o‘quvchilar dars jarayonida texnologiyalardan foydalanish ularni darslarga ko‘proq qiziqtirganini, bilim olishni yanada qiziqarli qilganini ta’kidlagan. Bunga qo‘shimcha ravishda, texnologiyalar yordamida darslar yanada ko‘ngilochar va interaktiv bo‘lib, o‘quvchilarning o‘zlashtirish darajasi yaxshilangan.

O‘qituvchilarning tajribalari:

O‘qituvchilar bilan olib borilgan intervyularda, ularning ko‘pchiligi raqamli texnologiyalarni qo‘llash jarayonida darslarni yanada samarali tashkil etish imkoniyatlarini qayd etgan. Biroq, ba’zi o‘qituvchilar texnologiyalarni o‘qitishda ba’zi qiyinchiliklarga duch kelishganini, masalan, texnik nosozliklar yoki o‘quvchilarning texnologiya vositalarini noto‘g‘ri ishlatishlari haqida fikr bildirgan.

Texnologiyalarning ta'lim tizimiga ta’siri:

Raqamli texnologiyalar o‘quvchilarning o‘quv jarayonidagi ishtirokini oshirishga yordam berdi, shu bilan birga, o‘quvchilarning mustaqil ishlash va o‘rganish qobiliyatlarini rivojlantirdi. O‘quvchilarning o‘rganish jarayonida texnologiyalarni integratsiyalash o‘qituvchilarga darslarni personalizatsiya qilish imkonini berdi. Bu esa ta'lim tizimida o‘quvchilarni individual ravishda qo‘llab-quvvatlash imkonini yaratdi.

Ta’lim texnologiyalarining ijtimoiy ta'siri:

O‘quvchilarning matematikani o‘rganishdagi tajribalari, shuningdek, ijtimoiy tarmoqlar va onlayn platformalar orqali bir-birlari bilan fikr almashish orqali yangi bilimlarni tezroq o‘zlashtirish imkoniyatini yaratdi. Bu o‘quvchilarning jamiyatdagi raqamli savodxonlikni oshirishga yordam berdi.

Natijalar: Tadqiqotning asosiy maqsadi matematika darslarida innovatsion ta'lim texnologiyalarining samaradorligini aniqlash edi. Tadqiqot davomida olingan natijalar quyidagicha:

Matematika darslarida texnologiyalarning samaradorligi

Raqamli ta'lim vositalari, xususan, interaktiv platformalar va mobil ilovalar, o‘quvchilarning matematikaga bo‘lgan qiziqishini sezilarli darajada oshirgan. Darslar yanada interaktiv va qiziqarli bo‘lganligi sababli, o‘quvchilar o‘z bilimlarini an'anaviy usullarga qaraganda yaxshiroq o‘zlashtirgan. O‘quvchilarning 85% i raqamli vositalar yordamida darslar o‘quvchilarga yanada qiziqarli va samarali bo‘lishini ta'kidlagan.

O‘quvchilarning muvaffaqiyatlari

O‘quvchilarning matematika fanidan olingan test natijalari ko‘rsatdiki, texnologiyalarni qo‘llash natijasida o‘quvchilarning muvaffaqiyat darajasi 15-20% ga oshgan. Testlarda ishtirok etgan o‘quvchilarning ko‘pchiligi yangi mavzularni ancha tez va samarali o‘zlashtirgan. Texnologiyalardan foydalanish orqali o‘quvchilarning analitik fikrlash qobiliyatlari rivojlangan va masalalarni yechishda mustahkam bilimlarga ega bo‘lganlar.

Motivatsiyaning oshishi

O‘quvchilarning motivatsiyasi sezilarli darajada oshdi. Tadqiqotda ishtirok etgan o‘quvchilarning 90% i interaktiv texnologiyalar orqali o‘rganishni yanada qiziqarli deb topgan. Bu o‘quvchilarning darslarga faol ishtirok etishlarini va o‘qishga bo‘lgan ijobiy munosabatlarini ko‘rsatadi.

O‘qituvchilarning tajribalari

O‘qituvchilar bilan olib borilgan intervyularda, texnologiyalarni qo‘llash jarayonida ularga yangi pedagogik yondashuvlarni o‘rganish va o‘z darslarini takomillashtirishda yordam berganliklari haqida fikr bildirishgan. Biroq, ba'zi o‘qituvchilar texnik nosozliklar, texnologiyalarni to‘liq qo‘llashda qiyinchiliklar va o‘quvchilarning texnologiyalarni noto‘g‘ri ishlatishlariga duch kelganliklarini ham qayd etishgan.

Ta'lim tizimiga ta'siri

Raqamli texnologiyalarni qo‘llash ta'lim tizimiga sezilarli ta'sir ko‘rsatdi. O‘qituvchilar o‘quvchilarga individual yondashuvni amalga oshirish imkoniyatiga ega bo‘ldilar. O‘quvchilarning o‘rganish jarayonida yanada mustaqil ishlash qobiliyatlari rivojlandi va o‘quvchilar o‘z bilimlarini mustahkamlash uchun qo‘shimcha resurslarga ega bo‘ldilar. O‘quvchilar o‘rtasida bilim almashish va bir-birlariga yordam berishning ijtimoiy aloqalari ham kuchaygan.

Texnologiyalarni qo‘llashdagi muammolar

Tadqiqot davomida texnologiyalarni qo‘llashda ba'zi qiyinchiliklar ham yuzaga kelgan. O‘qituvchilar ba'zi texnologiyalarni ishlatishda to‘liq tayyor bo‘lmaganliklarini, ba'zi platformalar va vositalarning texnik nosozliklar tufayli samarali ishlamasligini bildirganlar. Shuningdek, o‘quvchilarning texnologik vositalarga bo‘lgan individual qiziqishlari va ularga qaramlik darajasi turlicha bo‘lgan.

Umumiy Natija:

Tadqiqot shuni ko‘rsatdiki, matematika darslarida innovatsion ta'lim texnologiyalarini qo‘llash, o‘quvchilarning o‘zlashtirish darajasini oshirish, motivatsiyasini kuchaytirish va darslarni interaktiv tarzda o‘tkazish uchun samarali usul hisoblanadi. Biroq, texnologiyalarni samarali qo‘llash uchun o‘qituvchilarni tayyorlash va texnik infratuzilmani yaxshilash zarur. Shuningdek, raqamli vositalarning to‘liq imkoniyatlaridan foydalanish o‘quvchilarning ta'limga bo‘lgan qiziqishini yanada oshiradi va matematikani o‘rganish jarayonini yanada samarali qiladi.

Muhokama. matematika darslarida innovatsion ta'lim texnologiyalarining qo‘shimcha muhim va uning miqdorini tahlil qiladi. Ta'limning raqamli transformatsiyasiga asoslangan an'anaviy usullarni zamonaviy texnologiyalar bilan integratsiyalash zarurati yoki integratsiyalashgan. Maqola bu jarayonda Singapur ta'lim misol qilib keltirishi bilan e'tiborga loyiq, chunki Singapur matematika o‘qitishda dunyoda resurslardan biri sifatida tanilgan. Shu bilan birga, maqola o‘zbek ta'lim tizimiga ushbu tajribani moslashtirishni ko‘rib chiqish uni ishlab chiqarish kontekstda yanada foydali qiladi.

Maqolaning kuchli tomonlari

1. **Singapur yordamga e'tibor** : Maqolada Singapur ta'lim misolida innovatsion mahsulotlar sifatida keltirilishi juda o‘rinli. Singapurda o‘qitishda interaktiv platformalar, hisob resurslari va o‘yinlashtirish usullaridan yuklash o‘quvchilarining yuqori resurslarga matematikada muhim omil bo‘lib xizmat qilgan. Bu tajriba o‘zbek ta'lim tizimi uchun ham foydali model bo‘lishi mumkin.
2. **Tadqiqot metodologiyasining xilma-xilligi** : Maqolada adabiyotlar sharhi, eksperimental metod, so‘rovnoma, intervyu va sifatli tahlil kabi bir nechta tadqiqot usullari qo‘llanilgani uning ilmiy asosliligini oshirish. Bu usullar orqali o‘quvchilarning motivatsiyasi, o‘qituvchilarning yordami va texnologiyaning har tomonlama o‘rganilgan.
3. **Praktik misollar va ilovalar** : Maqolada kompyuterlar (masalan, Phet Colorado simulyatsiyalari) va interaktiv platformalar yordamida o‘quvchilarning matematik fikrlash tizimlarini aniq misollar bilan tuzatish. Test yo‘nalishida 15-20% yaxshilanish kuzatilgani bu korxonaning joylashuvini ko‘rsatadi.
4. **O‘zbek ta'lim tizimiga takliflar** : Maqola milliy tahlil bilan cheklanib qolmay, o‘zbek ta'lim tizimida matematikani o‘qitishni ta'minlash uchun balki amaliy taklif bilan foydali. Bu yordam o‘qituvchilari va ta'lim tashkilotlari uchun yol foydalanishi mumkin.

Xulosa va takliflar. Maqola innovatsion ta'lim jarayonlarida texnologiyaning qo‘shimcha tajriba va tajribalarini tahlil qilish, bu jarayonda Singapur ta'lim jarayoniga ta'sir ko‘rsatadi. Tadqiqot yordami, kompyuter yordami, interaktiv platformalar va mobil ilovalar matematika o‘qitish jarayonini sifatli darajada yaxshilaydi. O‘ning talabalar test 15-20% ga oshgani, hujjat motivatsiyasi va darslarga yordami yoki tasdiqlangan innovatsion texnologiyalarning tasdiqnilaydi. Shu bilan birga, o‘qituvchilarning xodimlarini qo‘llashda duch kelgan texnik muammolar va o‘quvchilarning texnologiyani noto‘g'ri xodimlari ham aniqlangan.

Singapur ta'lim tizimida matematikani o‘qitishda interaktiv texnologiyalar va xususiylashtirilgan tizimlar ishlab chiqarish qo‘llab-quvvatlash o‘zbek ta’lim tizimi uchun muhim saboq bo‘lib xizmat qiladi. Tadqiqotda qo‘llangan eksperimental tajribalar, so‘rovnomalar va sifatli tahlil usullari orqali texnologiyaning o‘quvchilarning analitik fikrlash va uni hal qilish usullariga oshirish ta'siri isbotlandi. uchun, texnologiyani keng joriy etish uchun infratuzilma, o‘qituvchilarning tayyorgarligi va resurslarni qabul qilish hal qilish zarur bo‘lgan muhim sifatida. Umuman olganda, innovatsion ta'lim texnologiyalari matematika darslarini zamonaviy talablarga moslashtirishda vosita vositalari ko‘rish va muhim tizimning ta'lim tizimida kengroq o‘zgarishlarga olib keladigan kelishuv ta'kidladi.

Takliflar

1. **O‘qituvchilar uchun malaka dasturlari**

Matematika o‘qituvchilarini innovatsion texnologiyalarni samarali qo‘llashga tayyorlash uchun muntazam treninglar va seminarlar tashkil etish zarur.

Masalan, GeoGebra, Phet Colorado kabi platformalardan sayohat bo‘yicha maxsus kurslar o‘rganish mumkin. Bu o‘qituvchilarning shaxsiy yordamiga moslashuvini tuzatish va texnik yordamni.

2. **Mahalliy sharoitga mos resurslar olish**:

Singapurdan maxsus material holda, o‘zbek tilida matematika o‘qitish uchun interaktiv platformalar va mobil ishlab chiqilishi kerak. Bu o‘quvchilar uchun mavzularni o‘z ona tilida o‘rganishni osonlashtirish va texnologiyadan olib kirishadi.

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BOSHLANG‘ICH SINF MATEMATIKA DARSLARIDA INTERFAOL METODLAR VA MULTIMEDIYALARDAN FOYDALANIB DARS SAMARADORLIGINI OSHIRISH USULLARI

Annotatsiya:*Mazkur magistrlik dissertatsiyasi boshlang‘ich sinf matematika darslarida interfaol metodlar va multimedialardan foydalanib dars samaradorligini oshirish usullariga bag‘ishlangan bo‘lib, undan ta’lim sifatini oshirishning nazariy metodologik asoslari, xususan, interfaol metodlar, multimedialarning nazariy metodologik asoslari va ta’limda raqamli texnologiyani amalga oshirish bo‘yicha xorij tajribalari o‘rganilgan. Bundan tashqari matematika darslarida multimedialarni tashkil etish shakli, metod va vositalari tadqiq qilingan.*

Kalit so‘zlar: *Innovatsiya, interfaol, multimedia, pedagogik mahorat, xotira, ta’lim sifati, bilim, axborot vositalari, kompyuter, o‘qitish samaradorligi, o‘quvchilarni jalb qilish, o‘quv natijalari*

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METHODS FOR INCREASING THE EFFECTIVENESS OF LESSONS USING INTERACTIVE METHODS AND MULTIMEDIA IN PRIMARY SCHOOL MATHEMATICS LESSONS

Annotation:*This master's thesis is devoted to methods of increasing the effectiveness of lessons using interactive methods and multimedia in primary school mathematics lessons, from which the theoretical methodological foundations of improving the quality of education, in particular, the theoretical methodological foundations of interactive methods, multimedia and foreign experience in implementing digital technology in education were studied. In addition, the form, methods and means of organizing multimedia in mathematics lessons were studied.*

Keywords: *innovation, interactive, multimedia, pedagogical skills, memory, quality of education, knowledge, information media, computer, teaching effectiveness, student engagement, learning outcomes.*

Kirish

Jahon ta’lim tizimida hozirgi zamonda ta’lim sohasida raqamli texnologiyalar, interfaol metodlar va innovatsion yondashuvlardan foydalanish

dolzarb masalaga aylanmoqda. Ayniqsa, boshlang‘ich ta’lim bosqichida o‘quvchilarning bilimga bo‘lgan qiziqishini oshirish, ularning tafakkurini rivojlantirish, analitik va mantiqiy fikrlashini shakllantirish uchun zamonaviy texnologiyalar muhim vosita bo‘lib xizmat qilmoqda. Rivojlangan davlatlar — Finlandiya, Yaponiya, Janubiy Koreya, AQSH kabi mamlakatlar ta’lim sifatini oshirishda axborot-kommunikatsiya texnologiyalaridan keng foydalanib, matematika fanini o‘rgatishda multimedialar, o‘yinli dasturlar, raqamli interaktiv darsliklar orqali bolalarda mustaqil fikrlash, ijodiy yondashuv va raqamli savodxonlikni shakllantirishga katta e’tibor qaratmoqda. Jahon tajribasi shuni ko‘rsatmoqdaki, ayniqsa boshlang‘ich sinflarda matematika darslarini zamonaviy usullar bilan tashkil qilish o‘quvchilarning fanga bo‘lgan munosabatini ijobiy tomonga o‘zgartiradi, ularning keyingi bosqichlardagi muvaffaqiyatiga mustahkam poydevor bo‘ladi.

O‘zbekiston Respublikasi Prezidenti tomonidan ilgari surilgan "Yangi O‘zbekiston – yangi ta’lim" tamoyili asosida, ta’lim-tarbiya tizimini zamonaviylashtirish, interfaol metodlar va IT texnologiyalarni joriy qilish bo‘yicha keng ko‘lamli islohotlar amalga oshirilmoqda. PF–6108-son Farmon asosida maktabgacha va umumiy o‘rta ta’lim tizimlarida zamonaviy axborot-kommunikatsiya texnologiyalarini joriy etish, o‘quv jarayonlarini raqamlashtirish va sifatli ta’lim muhitini yaratish bo‘yicha chora-tadbirlar belgilangan. Ayniqsa, matematika kabi fundamental fanlarda ta’lim samaradorligini oshirish, o‘quvchilarda mustaqil fikrlash, tahlil qilish va muammoli vaziyatlarda to‘g‘ri qaror qabul qilish ko‘nikmalarini shakllantirish dolzarb vazifaga aylangan.Davlatimiz rahbari ta’kidlaganidek, ‘‘O‘quvchilarda faqat yodlash emas, balki fikrlashga asoslangan kompetensiyalarni shakllantirish — ta’lim sifati va mazmunini yangilashning muhim omilidir.’’[15] Shu maqsadda Prezident va ijod maktablari, ixtisoslashtirilgan fan maktablari, IT maktablari kabi yangi tipdagi muassasalar tashkil qilinmoqda.

Adabiyotlar tahlili va tadqiqot metodologiyasi

Boshlang‘ich sinflarda matematika ta’limi nafaqat bilim berish, balki o‘quvchilarning fikrlash jarayonlarini rivojlantirish, ularda mantiqiy tahlil va muammo yechishga oid ko‘nikmalarni shakllantirishda muhim o‘rin egallaydi G.Girlmannning fikricha ‘‘Bu bosqichda o‘quvchilar matematik tushunchalar bilan tanishadilar, oddiy arifmetik amallarni bajarishni o‘rganadilar, bu esa ularning keyingi bosqichlardagi o‘quv faoliyatiga mustahkam poydevor yaratadi.’’[16]

P.Moni va R.Hoffman izlanishlariga ko‘ra, ‘‘Matematika darslarida axborot texnologiyalaridan foydalanish orqali o‘quvchilarning faolligi oshadi, bu esa o‘z navbatida, ularning darsga bo‘lgan qiziqishini kuchaytiradi’’[17]

O‘zbekistonlik olimlar — M.Ochilov, N.Ochilova, D.Fayzullaeva, R.Mavlonova, B.X.Xodjayev hamda B.Ziyomuhammadovlar o‘zlarining darslik va metodik qo‘llanmalarida boshlang‘ich sinfda interfaol metodlar va raqamli

[15] 1 Harakatlar strategiyasi asosisiy asosida jadal taraqqiyot va yangilanish sari // T.: “G .G ulom ”, -2 0 1 7 - 70 b
[16] G.Girlmann. “Early Math Education and Cognitive Skills Formation”, 2014.
[17] P.Moni & R.Hoffman. "Digital Tools in Elementary Mathematics: Effects on Engagement", 2016.

vositalarni tadbiq etish usullarini keng tahlil qilganlar. Ularning fikricha ‘‘ Bu usullar o‘quvchilarni mustaqil fikrlashga undaydi va darslarning samaradorligini oshiradi’’[18].

A.Lyob va J.Roschelle tadqiqotlarida loyiha asosida o‘qitish metodining matematikani hayotiy holatlarga bog‘lashda samarali usul ekani e’tirof etilgan. Ularning fikricha, ‘‘O‘quvchilar real hayotdagi muammolarni matematik nuqtai nazardan tahlil qilishga o‘rgatilganda, bilim samaradorligi yuqori bo‘ladi’’[19]. Shuningdek, interfaol metodlar, jumladan guruhli ish, munozara, rolli o‘yinlar, loyiha asosida ishlash kabi yondashuvlar o‘quvchilarni darsda faol ishtirok etishga undaydi. Bu esa ularning o‘z fikrlarini erkin ifodalash, o‘zaro tajriba almashish va ijtimoiy ko‘nikmalarni rivojlantirishga xizmat qiladi .

Xulosa

Darhaqiqat biz hozirgi zamon talabidan kelib chiqib o‘quvchi yoshlarni qiziqishi va salohiyatini hisobga olgan holda biz pedagoglar o‘z o‘qitish metodikamizni va o‘qitish uslubimizni o‘zgartirishimiz lozim. Bunga esa biz kreativligi va interaktiv metodlarni o‘z o‘rnida kerakli uslubda va darajada qo‘llashimiz kerak, bu albatta o‘quvchilarni bilim olishda yanada qiziqtirishi shakllantiradi, shuning uchun ham biz yangi texnologiyalardan foydalanamiz, yuqorida ana shunday texnologiyalar yordamida matematika darslariga qo‘yilgan maqsadlarga erishish usullari haqida va ularning barcha jihatlarini tahlil etib o‘tdik.

Foydalanilgan adabiyotlar

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METHODOLOGY FOR PROMOTING A HEALTHY LIFESTYLE AMONG NEIGHBORHOOD YOUTH THROUGH THE DEVELOPMENT OF PHYSICAL QUALITIES

Abstract: *This article explores the role and significance of developing physical qualities in promoting a healthy lifestyle among neighborhood youth. It analyzes the potential of involving young people in sports activities to improve their physical abilities such as strength, agility, and endurance, while also shaping individuals committed to a healthy lifestyle free from harmful habits. The article presents practical methods that can be applied in neighborhood conditions, including forms of organizing sports events and mechanisms for monitoring physical development. The research findings may serve as an effective tool for widely promoting a healthy lifestyle among the youth.*

Keywords: *Healthy lifestyle, physical qualities, youth, neighborhood, physical education, sports activities, healthy living, physical activity, pedagogical methodology, health promotion.*

Introduction

Today, the formation and strengthening of a healthy lifestyle is one of the priority areas of state policy, and this issue is receiving increasing attention, especially among the youth. Organizing meaningful leisure activities for neighborhood youth, involving them in sports, and developing their physical qualities can significantly contribute to shaping a healthy lifestyle. Indeed, encouraging physical activity, regular exercise, and the development of healthy habits among young people helps improve their health and protects them from harmful influences. This article analyzes a methodological approach to promoting a healthy lifestyle among neighborhood youth through the development of their physical qualities.

Methodology

The following methodological foundations and approaches were applied in writing this article:

Theoretical analysis: A review of scientific literature in the fields of healthy lifestyle, physical education, and youth development.

Empirical approach: Practical observations, interviews, and surveys were conducted to assess the level of physical activity among neighborhood youth.

Pedagogical experiment: The impact of sports clubs and physical exercises on the development of physical qualities in youth was evaluated.

The object of the research was boys and girls aged 14 to 20 living in neighborhood communities. The subject of the research was the methodology of

forming a healthy lifestyle through the development of physical qualities such as strength, endurance, agility, and mobility.

Main Part

Physical qualities refer to the ability of the human body to effectively perform specific physical activities. These include strength, endurance, speed, balance, coordination, and agility.

The following methodological approaches can be effective in promoting a healthy lifestyle among neighborhood youth:

1. Introducing Sports Activities: Developing physical qualities by implementing popular sports such as football, volleyball, and running. Organizing local sports competitions to enhance motivation and foster a sense of healthy competition.

2. Establishing Clubs and Training Sessions:

Organizing regular physical training sessions 2–3 times a week (e.g., morning runs, general physical exercises).

Creating group workouts led by youth leaders to encourage participation and peer support.

3. Motivational Approach:

Conducting discussions, motivational video screenings, and meetings on the topic of healthy lifestyle habits.

Inviting successful athletes to meet with the youth to inspire and encourage them.

4. Monitoring and Evaluation:

Assessing participation levels and changes in physical condition throughout the training period. Measuring physical indicators such as endurance, strength, and agility to analyze results and track improvement.

There are several advantages of promoting a healthy lifestyle through sports and physical activity within the neighborhood context:

1. Cost-effectiveness:

Engaging in sports at the community level does not require significant financial resources. In most cases, basic sports equipment (balls, ropes, small running tracks) is sufficient.

2. Community Unity and Social Engagement:

Physical activities strengthen community bonds, help divert youth from negative influences, and contribute to creating a positive, healthy environment.

3. Health Improvement:

Regular physical exercise positively affects the cardiovascular, respiratory, muscular, and skeletal systems, thus promoting overall health.

4. Discipline and Willpower Development:

Performing planned physical exercises fosters discipline and helps develop willpower among young participants, which is essential for personal growth and long-term success.

Practical Activity Proposals for Neighborhood Implementation

1. "10 Minutes a Day" Initiative:

Organizing 10-minute morning exercise sessions each day (e.g., stretching, light jogging, jump rope exercises).

Sharing photos and videos of these activities on the neighborhood's social media platforms to inspire others and increase engagement.

2. "Youth Sports Day" Weekly Event:

Dedicating one day of the week—such as Sunday—for open sports sessions for all local youth.

Organizing family sports activities involving parents and children (e.g., relay races, ball games).

3. Mini-Tests for Developing Physical Qualities:

Conducting monthly tests focused on agility, endurance, and strength (e.g., 30-second jumps, 1-minute sit-ups, 60-meter sprints).

Providing incentives based on results (e.g., certificates, small prizes).

Conclusion

Forming and sustainably developing a healthy lifestyle among neighborhood youth through the enhancement of physical qualities is one of the pressing issues of today. This goal can be achieved through a systematic approach, appropriate methodologies, and training sessions tailored to the needs of young people. Youth engaged in sports are not only healthier and more energetic, but they also become active, positive, and goal-oriented members of society. Therefore, it is essential to widely implement comprehensive methods aimed at creating a sporting environment in neighborhoods and encouraging young people to maintain physical activity.

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MODERN APPROACHES TO OCCUPATIONAL HYGIENE IN AGRO-INDUSTRIAL ENTERPRISES (ON THE EXAMPLE OF LIVESTOCK, POULTRY, AND HORSE BREEDING)

Abstract: *The agro-industrial sector is a vital branch of the economy where ensuring safe working conditions and protecting workers' health are of critical importance. This article is devoted to the study of modern approaches to occupational hygiene in agro-industrial enterprises. It analyzes innovative strategies aimed at improving working conditions, minimizing occupational risks, and increasing production efficiency. The paper examines modern hygiene practices including ergonomic design, automated monitoring systems, eco-friendly technologies, and staff training programs. Particular attention is paid to the assessment and control of chemical, biological, and physical risk factors in the workplace. The study discusses integrated approaches to occupational hygiene management based on international standards (ISO, OHSAS) and best practices. The article offers practical recommendations for establishing a sustainable and safe working environment in agro-industrial enterprises, which not only helps protect workers' health but also contributes to improved economic efficiency. The findings serve as a valuable resource for specialists in the agro-industrial sector, researchers, and policymakers.*

Keywords: *occupational hygiene, agro-industrial enterprises, occupational hazards, ergonomics, safe working conditions, eco-friendly technologies, international standards.*

Introduction

Today, the agro-industrial complex is considered one of the strategically important sectors of the global economy. It encompasses various branches of agriculture, uniting production activities in fields such as crop production, livestock farming, poultry farming, and horse breeding[1,2].

In Uzbekistan, the growing population, intensified urbanization processes, and increasing income levels have led to a steadily rising demand for food products, particularly animal products—such as meat, milk, and eggs. This situation has consequently increased the demand for production capacity, working conditions, and sanitary-hygienic standards in the agro-industrial complex.

According to the national statistical data, per capita meat consumption in Uzbekistan reached 50 kg in 2020 and increased to 55–60 kg by 2024 (State Committee of the Republic of Uzbekistan on Statistics, 2024; Institute for Macroeconomic and Regional Studies, 2024). Among meat products, beef holds the largest share, making up 50–55% (27–33 kg) of the total consumption. Poultry

accounts for 25–30% (15–18 kg), while lamb accounts for 20–25% (11–15 kg). Horse meat consumption is limited in local markets, averaging around 1–2 kg. The average per capita consumption of eggs is around 140–150 units, and milk and dairy products amount to approximately 150–160 liters.

Among the units that make up the agro-industrial complex, livestock farms are considered one of the most complex and hazardous sectors of agriculture. Workers engaged in livestock farming are constantly exposed to various workplace conditions and factors in the production environment. These include microclimatic elements (such as temperature, air movement speed, noise at workplaces, chemical and toxic gases), as well as biological risks that arise during animal care, machinery operation, and interaction with production mechanisms. Each of these factors, individually or in combination, can have adverse effects on workers' health and labor productivity[3,4].

Additionally, workers in livestock sectors are continuously exposed to unfavorable factors such as microclimatic parameters that do not meet sanitary-hygienic and technological requirements, high levels of noise, dust, and gas concentrations at the workplace, microbial air pollution, and physically demanding tasks. These elements negatively impact workers' health[7].

In livestock buildings, air temperature in the winter season ranges from 8–10°C, while in the summer season it ranges from 18–27°C. The relative humidity of the air varies between 60–95%, and the air movement speed is 0.8–1.5 m/s. Significant temperature fluctuations (7–11°C) are observed during working hours in production facilities[5,6].

Research Results

According to the preliminary analysis based on data from workplace attestations in the livestock sector, it has been revealed that many workplaces are exposed to hygienically significant harmful factors. These factors currently occupy a leading position among the causes of occupational diseases. They include noise from production processes, fibro genic dust aerosols of plant and animal origin (mainly grain-based), certain chemical substances (most commonly ammonia), unfavorable microclimatic conditions in production premises, and the physical intensity of labor.

Other harmful factors such as lighting conditions, non-ionizing radiation, or labor stress are also assessed, but their intensity usually does not exceed hygienic norms.

During the research, the working conditions and factors affecting the labor process were carefully studied for each sector of the agro-industrial complex. These include areas such as horse breeding, cattle farming, and poultry farming.

Horse breeding is a branch of livestock farming those deals with the care and use of horses. Its main directions are productive horse breeding (horse meat and fermented mare’s milk) and sport horse breeding.

In horse breeding enterprises, horses are typically kept both in herds and in stables. To care for and shelter horses, stables, warehouses, breeding facilities, as well as fenced areas, sections, and water troughs are used.

The main technological stage of a horseman's work is the grazing of animals. Horses are supervised by both night and day horsemen. Each member of the brigade has a specific set of responsibilities, which defines the differences in the structure of the workday. In other words, even at the lowest temperatures, service personnel must remain outdoors in unfavorable microclimatic conditions.

Performing a horseman's main tasks requires the entire daylight period (from 5:00 AM to 11:00 PM in summer). The main harmful factor at the horseman's workplace is the high physical workload, characterized by the weight of lifted and transported items, which can reach 40–50 kg.

The horseman's main functional responsibilities include: caring for horses; monitoring the health of the assigned group of horses; retrieving feed and bedding from storage; feeding and watering the horses; performing minor repairs to stables, stable equipment, and watering devices; and assisting in the delivery of foals during birthing.

Although complex mechanization has been introduced, horsemen still manually perform tasks such as distributing feed, washing watering containers and other equipment, and inspecting animals. Operations involving horizontal movement account for 35–50% of working time, with total walking distances reaching 12 km or more (see Table 1).

In addition to the traditionally harmful work environment and labor process factors in horse breeding, it is also important to highlight the high risk of injury during horse care and competition activities.

The main contributing factor remains elements of heavy physical labor, which is characteristic of livestock farming as a whole.

Table 1

Hygienic Evaluation of Working Conditions of Main Professions in Equine Breeding

Work environment and process factor	Permissible limit	Actual value	Working condition class
Physical workload	—	—	—
Lifting and moving loads combined with other work	Men: <30 kg Women: <10 kg	>35 kg >12 kg	3.2
Horizontal movement due to technological process, km	Up to 10 km	>12 km	3.2

Noise, equivalent level, dB(A)	80	70	2
Microclimate of production rooms	Within permissible parameters	Within permissible parameters	2
Plant and animal-origin dust (2–10% silicon dioxide mixture; grain dust), mg/m³	4.0	5.5	3.1
Overall assessment of working conditions	—	—	3.2

The above table clearly indicates the hygienic assessment of working conditions for employees in key occupations within equine breeding. Factors such as physical workload and dust exposure indicate harmful conditions (Class 3.1–3.2), while noise and microclimate remain within permissible levels (Class 2).

In certain cases, the contamination of the air in the work zone with plant or animal-derived dust (aerosols) is a significant health factor, primarily observed during feed distribution and horse care activities. Other factors related to the work environment and process, such as the microclimate and noise levels in production facilities, are present in workplaces, but their levels in most cases do not exceed sanitary-hygienic requirements.

2. Livestock Complexes Specializing in Large Cattle Breeding

Large cattle breeding is divided into meat and dairy production directions. The technological processes in these complexes consist of interconnected stages, including cattle reproduction, feeding, and the care of young animals.

In dairy production, specific processes such as cow milking and initial milk processing stand out. The primary goal of workers in livestock complexes is to efficiently manage the health, feeding, and reproduction processes of cattle, as well as to obtain dairy products. In meat production, animals are typically kept in separate facilities.

Feed distribution is carried out using specialized mobile mixer-dispensers, while watering is provided through automated group watering systems. In hot weather, cattle are cooled using water-spraying machines. Manure removal is performed with bulldozers. The purification of indoor air from harmful gases is achieved through inlet-exhaust ventilation systems.

The microclimate in livestock facilities varies depending on their purpose and is regulated using modern systems, such as heating and ventilation. In enclosed facilities for breeding and cattle housing, temperatures range from 3–12°C in the

cold season and 15–34°C in the warm season. Relative air humidity ranges from 40–80% in winter and can reach 90–100% in summer. Air movement velocity typically does not exceed 0.6 m/s.

Despite the high level of mechanization in modern livestock complexes, elements of heavy physical labor persist in workers' tasks. This is particularly evident in processes such as feed preparation, distribution, and cow milking. Physical workload is associated with constant horizontal movement due to technological processes, as well as lifting and moving heavy loads (alternating with other tasks).

Additionally, high levels of production noise are observed in feed preparation areas, resulting from the operation of equipment such as straw choppers, vacuum pumps, or other machinery. Noise levels can sometimes reach 84–88 dBA, but due to workers not being permanently present in these areas, the equivalent noise level is typically lower (see Table 2).

Table 2

Hygienic Assessment of Working Conditions of Key Occupations in Cattle Breeding

Factor of Working Environment and Process	Permissible Limit	Actual Value	Class of Working Conditions
1.Labor Intensity			
Lifting and moving weights alternated with other work	Men: <30 kg, Women: <10 kg	<38 kg, <14 kg	3.1
Horizontal movement due to technological process, km	<8 km	<13 km	3.1
2. Noise, equivalent level, dBA	80	85-90	3.1
3. Microclimate of production premises	Permissible parameters	Cooling during cold season	3.2
4. Harmful chemical substances (ammonia, hydrogen sulfide, skatole, indole, etc.)	MAC (Maximum Allowable Concentration)	1,2–2,0 MAC	3.2
5. Dust of plant and animal origin (mixture of silicon	4.0	4,5	2

dioxide 2–10%; grain dust), mg/m³			
Overall assessment of working conditions			3.2

The above table clearly shows that actual indicators exceed permissible limits, indicating that workers are exposed to heavy physical labor. This is associated with activities such as feed transport, equipment handling, or other technological processes. Due to technological processes, workers cover distances exceeding the established norms during the day, with men surpassing the norm by 1.26 times and women by 1.4 times. Noise levels also exceed permissible limits, with noise in feed preparation areas, caused by equipment such as straw choppers and vacuum pumps, being 1.065–1.125 times higher than the norm. The concentration of harmful chemical substances (ammonia, hydrogen sulfide, skatole, indole, etc.) was found to be 1.2–2.0 times higher than the permissible limit.

Conclusion

This study is dedicated to analyzing modern occupational hygiene approaches in agribusiness enterprises, specifically in livestock farming, poultry farming, and equine breeding. The research findings indicate that working conditions in agribusiness complexes are characterized by chemical (ammonia, hydrogen sulfide, etc.), biological (microbes, dust aerosols), and physical (noise, unfavorable microclimate) hazards, as well as demands for heavy physical labor. In equine breeding, physical workload (lifting loads of 35–50 kg, horizontal movement exceeding 12 km) and plant-animal-derived dust (5.5 mg/m³, norm 4.0 mg/m³) were identified as harmful conditions (Class 3.1–3.2), while noise (70 dBA) and microclimate remained within permissible levels (Class 2). In large cattle breeding, noise levels (85–90 dBA, norm 80 dBA), concentrations of harmful chemical substances (1.2–2.0 times above the limit), and physical workload (lifting up to 38 kg, 13 km of horizontal movement) exceeded normative limits, indicating harmful conditions (Class 3.1–3.2).

These factors negatively impact workers' health, increasing the risk of occupational diseases. Based on the research, practical recommendations were developed to protect workers' health and enhance production efficiency. These findings and recommendations serve as valuable guidance for specialists, researchers, and policymakers in the agribusiness sector, contributing to sustainable development in the industry.

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AGROBIZNES MAJMUA FAOLIYATIDA INNOVATSIYALAR ZARURATI VA ULARNING AMALIY AHAMIYATI

Annotatsiya: *Maqolada agrobiznes majmuasi faoliyatida innovatsiyalarning zarurligi, nazariy va ilmiy asoslari, mamlakat agrobiznes korxonalarida ham innovatsiyalarni joriy etish, innovatsion menejmentni joriy etish orqali korxona raqobatbardoshligini oshirish va mustahkamlash imkoniyatiga ega bo‘lishligi haqida fikrlar yuritilgan.*

Kalit so‘zlar: *agrobiznes majmuasi, eksportbop mahsulotlar, innovatsiya, progressiv natija, iqtisodiyotini rivojlantirish, innovatsion yo’naltirilganlik, innovatsion korxona.*

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THE NEED FOR INNOVATION AND THEIR PRACTICAL SIGNIFICANCE IN THE ACTIVITIES OF THE AGRIBUSINESS COMPLEX

Annotation: *The article examines the need for innovation in the activities of the agro-industrial complex, their theoretical and scientific foundations, the possibility of introducing innovations at enterprises of the country's agro-industrial complex, as well as the possibility of increasing and strengthening the competitiveness of an enterprise through the introduction of innovative management.*

Key words: *agro-industrial complex, export-oriented products, innovations, progressive results, economic development, innovation orientation, innovative enterprise., water cadastre, modern information and communication technologies.*

Kirish. Mamlakatning iqtisodiyotida ahamiyatli sohalar orasida qishloq xo’jaligining roli katta. Uning sabablari – oziq-ovqat xavfsizligini ta’minlash, ijtimoiy muvozanat, davlatning bir nechta reytinglari ijobiy bo’lishini tashkil etishidir. Xozirgi kunda mavjud agrobiznes majmuasining ahamiyati va o‘rni juda

katta. Uning o‘rni eng avvalo mamlakat yalpi ichki mahsulotidagi salmog‘i balan belgilanadi. Bugungi kunda mamlakatda yaratilayotgan yalpi ichki mahsulotning 50 foizidan ko‘prog‘i agrobiznes majmuasida ishlab chiqariladi. Majmuaning ahamiyati eng avvalo uning ishlab chiqarayotgan mahsulotlarning qimmati bilan belgilanadi. Gap shundaki, agrobiznes majmuasining oxirgi mahsuloti insonlar kundalik iste’moliga qaratilgan oziq-ovqat va insonlarning shaxsiy kiyim-kechaklari, uy-ro‘zg‘or buyumlari hisoblanadi. Yoki O’zbekistondagi agrobiznes majmuasida oziq-ovqatning 99 foizidan ko‘prog‘i etishtiriladi. Bu esa o’z navbatida mamlakatning oziq-ovqat xavfsizligini ta’minlashga o’zining ulushini qo’shadi.

Markaziy Osiyo hududuida O’zbekistonda mavjud agrobiznes korxonalari uchun oxirgi yillarda asosiy vazifalardan biri sifatida eksportbop mahsulotlar etishtirish, mamlakat iqtisodiyotini rivojlantirish uchun zarur bo‘lgan valyuta tushumini ta’minlashda faol qatnash muhim bo’lib qoldi.

Shu maqsadga erishish uchun O‘zbekiston Respublikasi Prezidentining 2022 yil 28 fevralda “2022-2026 yillarga mo‘ljallangan Yangi O‘zbekistonning Taraqqiyot strategiyasi to‘g‘risida” PF-60 sonli farmoni qabul qilindi. Unga ko‘ra, qishloq xo‘jaligini modernizatsiya qilish va jadal rivojlantirishda tarkibiy o‘zgartirishlarni chuqurlashtirish va qishloq xo‘jaligi ishlab chiqarishni muttasil rivojlantirish, mamlakat oziq-ovqat xavfsizligini yanada mustahkamlash, ekologik toza mahsulotni ishlab chiqarishni kengaytirish, agrar sektorining eksport salohiyatini sezilarli darajada oshirish ko‘zda tutilgan.

Shuningdek, qishloq xo‘jalik ekinlarining yangi seleksiya navlarini hamda yuqori mahsuldorlikka ega, kasallik va zararkunandalarga chidamli, mahalliy er-iqlim va ekologik sharoitlarga moslashgan hayvonot turlarini yaratish va ishlab chiqarishga joriy etish bo‘yicha ilmiy-tadqiqot ishlarini kengaytirish, fermer xo‘jaliklar, eng avvalo qishloq xo‘jaligi mahsulotlarni ishlab chiqarayotgan, qayta tayyorlanayotgan, tayyorlash, saqlash, sotish, kurilish ishlari va xizmatlar ko‘rsatish bilan shug‘ullanayotgan ko‘p tarmoqli fermer xo‘jaliklarini rag‘batlantirish va rivojlantirish uchun qulay shart-sharoitlar yaratish ham belgilab qo‘yilgan.

Qishloq xo‘jalik mahsulotlarini chuqur qayta ishlash, yarim tayyor mahsulotlar va tayyor oziq-ovqat mahsulotlarini, shuningdek qadoqlash buyumlarini ishlab chiqarish bo‘yicha eng zamonaviy yuqori texnologiyali uskunalar bilan jihozlangan, qayta ishlovchi yangi korxonalarni qurish, mavjudlarini rekonstruksiya va modernizatsiya qilish yuzasidan investitsiya loyihalarini amalga oshirish; qishloq xo‘jaligi mahsulotlarni saqlash, qishloq xo‘jaligi ishlab chiqarish sohasiga intensiv usullarni, eng avvalo zamonaviy suv va resurslarni tejaydigan agrotexnologiyalarni joriy etish, unumdorligi yuqori qishloq xo‘jaligi texnikasidan foydalanish; global iqlim o‘zgarishi va Orol dengizi qurib qolishining qishloq xo‘jaligi rivojlanishi hamda aholining hayot faoliyatiga salbiy ta’sirini yumshatish bo‘yicha tizimli chora-tadbirlarni ko‘rish ham ko‘zda tutilgan.

1-rasm. Qishloq xo’jalikda o’simliklarno ximoyalashdagi yangi masofaviy texnologiyalar

Amalga oshirilgan ishlarning natijasi sifatida qo’shilgan narxga ega maxsulotni ko’proq tsyyorlash va yangi bozorlarda sotishga erishish xisoblanadi.

Mavzuga oid adabiyotlar sharhi. Adabiyotlarda innovatsiya mohiyatini ta’riflashga bir necha xil yondashuvlar uchraydi. Ikki nuqtai nazar eng keng tarqalgan. Birinchi holda yangilik kiritish ijodiy jarayonning yangi mahsulot (texnik), texnologiya, metod va h.k. ko‘rinishidagi natijasi sifatida tasavvur qilinadi, ikkinchisida esa yangi mahsulotlar, elementlar, yondashuvlar, qoidalarning mavjudlari o‘rniga kiritilishi jarayoni sifatida. Bizga innovatsiyalarning ijodiy jarayonning yaratilgan (yoki joriy etilgan) yangi iste’mol qiymatlari ko‘rinishidagi natijasi sifatida ta’riflanishi maqbulroq ko‘rinmoqda. Bu yangi iste’mol qiymatlarining qo‘llanishi ulardan foydalanuvchi shaxslar yoki ko‘nikmalarini o‘zgartirishlarini talab qiladi. Bunda bozor munosabatlari sharoitlarida innovatsiyaning eng muhim xususiyati bo‘lib, uning iste’mol xususiyatlari yangi ekanligi chiqish lozim. Texnik jihatdan yangi ekanligi esa ikkinchi darajali rol o‘ynaydi.

Innovatsion nazariyaning eng asosiy qoidalari avstriyalik iqtisodchi Y.Shumpeter asarlarida to‘la asoslab berildi. Mutaxassislarning umumiy fikricha, aynan u bu nazariyaning shakllanishi va rivojlanishiga eng muhim hissa qo‘shdi. Y.Shumpeter 1911 yilda o‘z konsepsiyasini mashhur «Iqtisodiy rivojlanish nazariyasi» asarida bayon qildi. Ba’zan bu konsepsiya rivojlanishini dinamik (jo‘shqin) nazariya sifatida ta’riflanadi, chunki aynan dinamika, doimiy tebranishlar olg‘a rivojlanishning sababidir.

Innovatsion nazariyaning shakllanishiga rus tadqiqotchilari ham muhim hissa qo‘shdilar. 1970-1980 yillarda fandagi tub o‘zgarishlar natijasida innovatsion rivojlanish muammolarining tadqiq etilishiga A.I.Anchikin, L.M.Gatovskiy, Yu.V.Yakovuts, L.S.Baryutin, L.S.Blyaxman, B.Z.Milser, A.M.Prigojin, N.I.Lapin, Yu.A.Ushakov va boshqalar salmoqli hissa qo‘shdilar.

Tadqiqot metodologiyasi. Ilmiy maqolada tahlil va sintez, tizimli yondashuv, iqtisodiy tahlil, guruhlash, ekspert baholash va taqqoslash usullaridan foydalanilgan.

Tahlil va natijalar. Innovatsiya – mavjud tizimlar rivojlanishini boshqarish jarayoni bo‘lib, unda innovatsion mahsulot amaliy qo‘llanilish bosqichigacha olib kelinadi va bozor muvaffaqiyatini ta’minlaydi.

Mamlakatlar raqobatdoshligini baholashning ko‘rsatishicha, korxonalar rivojlanishining asosiy strategiyasi bo‘lib, quyidagi tamoyillarga asoslangan boshqaruv siyosatini amalga oshirish xizmat qiladi:

- tabiiy va iqlim resurslardan oqilona foydalanish;
- jamg‘arilgan boyliklardan o‘z o‘rnida foydalanish;
- investitsiyalarni faol jalb qilish;
- innovatsiyalarni qo‘llab-quvvatlash.

Innovatsion korxonalar ham ishlab chiqarilayotgan innovatsiyalarning yangiligi darajasi (tubdan yangilar, nisbatan, qisman, mahalliy yangilik yoki imitatsiyaga egalar) muvofiq ixtisoslashadilar [6, 7].

2-rasm. Adirli joylar tomchilatib sug’orish (Izroil texnologiyasi)

Xulosa. Shunday qilib, innovatsiyani innovatsion faoliyatning natijasi sifatida qaralganda, unga quyidagi muhim xususiyatlarnu qayd etsak bo’ladi:

-yangi progressiv natija ko‘rinishi namoyon bo‘layotgan ilmiy va amaliy yangiligi, bu natija undan foydalanayotgan tizim tomonidan ilgari qo‘yilmagan;

-yangi mahsulotning tijoratlashuvi bosqichida olingan natijaning amalda qo‘llanishini nazarda tutish.

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CULTURAL ADJUSTMENT AND INTEGRATION OF FOREIGN STUDENTS IN HIGHER EDUCATION INSTITUTIONS

Abstract:*The increasing globalization of education has led to a surge in the enrollment of foreign students in higher education institutions worldwide. While this fosters cross-cultural exchange and academic diversity, international students often face significant challenges in adapting to new cultural and academic environments. This study explores the process of cultural adjustment and integration among foreign students, focusing on psychological, social, and institutional factors. Drawing from a mixed-methods research design that includes surveys, interviews, and case studies across five countries, the research identifies key challenges, adaptation strategies, and institutional practices that support or hinder cultural integration. The findings offer practical implications for universities to enhance support systems and promote inclusive, interculturally competent campuses.*

Keywords*: Cultural adjustment, international students, higher education, integration, acculturation, academic adaptation, student support services*

Introduction:

Globalization has led to a significant rise in international student mobility, with over 6.3 million students studying abroad, primarily in English-speaking and emerging countries. This trend enriches universities with cultural diversity but also presents challenges in cultural adjustment and integration. International students often face language barriers, academic stress, and social isolation, which affect their well-being and success. This study explores these experiences across five countries, aiming to understand both student perspectives and institutional practices. The goal is to identify effective strategies for creating more inclusive and supportive educational environments.

Literature review:

Research shows that international students face complex challenges—psychological, sociocultural, academic, and institutional—when adjusting to new educational environments. Key theories such as **Berry's Acculturation Model**, **Lysgaard's U-Curve Theory**, and **Ward's Sociocultural Adaptation Theory** explain how students adapt emotionally and behaviorally to foreign cultures. Academic integration is often hindered by unfamiliar teaching methods, while social integration is affected by difficulties forming local friendships. Language remains a major barrier to both academic success and social engagement.

Universities respond with support programs like orientation sessions, language labs, and peer mentoring. However, the effectiveness of these initiatives varies widely. Inclusive practices, such as intercultural curricula and ongoing support, have been shown to improve outcomes for international students.

Material or method of research

This study employed a mixed-methods research design to examine the cultural adjustment and integration of international students in higher education institutions across the UK, India, Australia, Spain, and Singapore. Data were collected from 600 students through structured online surveys that included both Likert-scale and open-ended questions focused on academic, sociocultural, and psychological adaptation. Additionally, semi-structured interviews were conducted with 40 international students and 15 university staff members to gain deeper insights into personal experiences and institutional practices. Selected universities were also analyzed as case studies to contextualize findings. Quantitative data were analyzed using SPSS for descriptive statistics and correlation analysis, while qualitative data were thematically analyzed using NVivo. Ethical approval was obtained from relevant institutional review boards, and all participants provided informed consent with assurances of confidentiality. This approach ensured both breadth and depth in understanding international student adjustment across diverse cultural and institutional settings.

Results:

The analysis of both quantitative and qualitative data revealed several key findings related to the cultural adjustment and integration of international students in higher education institutions:

4.1 Academic Adjustment

- **72%** of surveyed students reported initial difficulties with academic expectations, such as critical thinking, self-directed learning, and classroom participation.
- Students from Asian and African regions experienced more academic pressure due to unfamiliar teaching methods and assessment styles.
- Language proficiency positively correlated with academic performance ($r = 0.64$, $p < 0.01$), indicating that students with better English or host-language skills adjusted more effectively.

4.2 Sociocultural Integration

- **62%** of participants reported challenges in making local friends, often citing cultural misunderstandings, language barriers, or lack of social opportunities.
- Students who engaged in multicultural events or peer mentoring programs were significantly more likely to feel a sense of belonging on campus.
- Interview data highlighted that friendships with co-nationals were often a source of comfort but sometimes limited broader integration.

4.3 Psychological Well-being

- **45%** of students reported feelings of isolation or homesickness during the first six months.
- Access to mental health resources was inconsistent; students in the UK and Australia reported better institutional support compared to those in India and Spain.
- Students who received early orientation and continuous support experienced lower levels of culture shock and anxiety.

4.4 Institutional Support and Practices

- Institutions with **centralized international offices** and structured support systems (e.g., University of Melbourne, National University of Singapore) showed higher student satisfaction scores.
- Participants emphasized the importance of **ongoing support** rather than one-time orientation sessions.
- Lack of intercultural training among faculty was identified as a barrier to effective classroom integration.

4.5 Comparative Insights

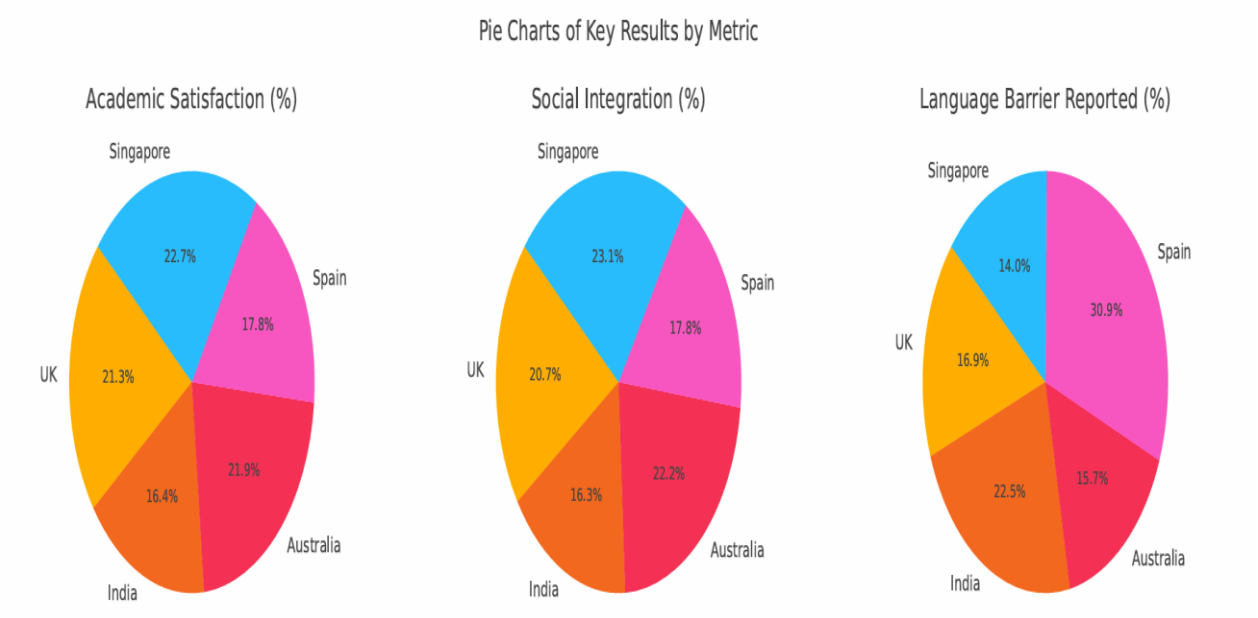
- Students in Singapore and the UK reported the highest overall satisfaction with academic and social experiences.
- Indian universities showed strong peer bonding but lacked formal support services tailored to international needs.
- Spanish universities offered vibrant cultural experiences but faced language barriers for non-Spanish speakers.

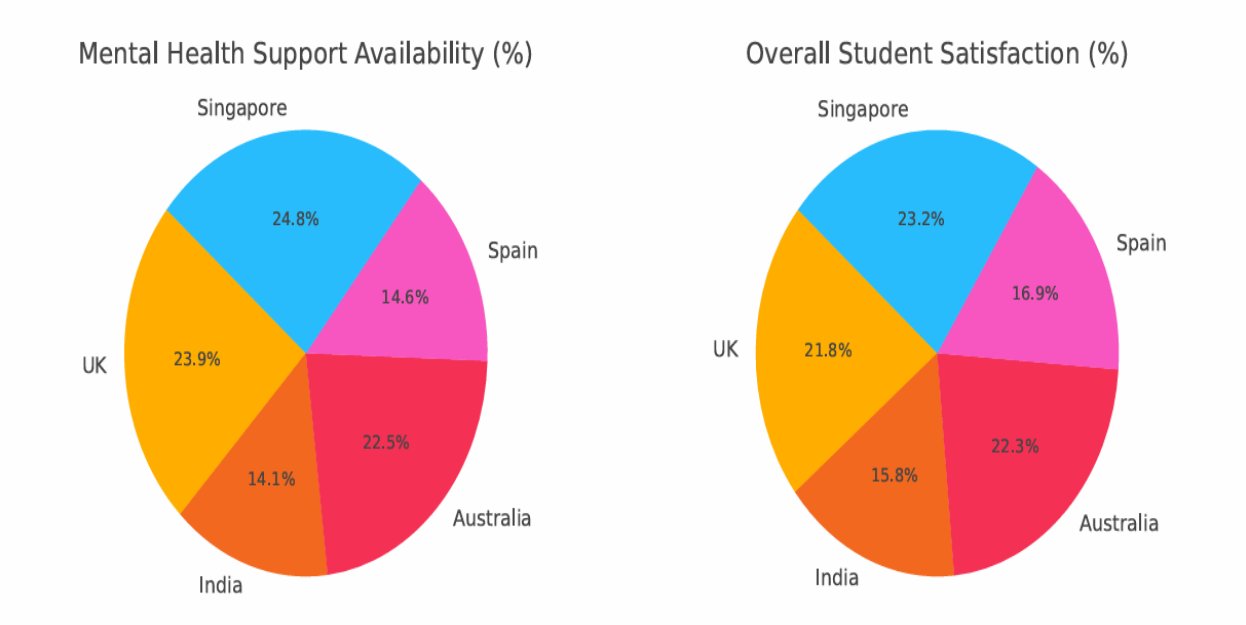
Table 1:

Table 1: International Student Integration Results by Country

Country	Academic Satisfaction (%)	Social Integration (%)	Language Barrier Reported (%)	Mental Health Support Availability (%)	Overall Student Satisfaction (%)
UK	78	70	30	85	80
India	60	55	40	50	58
Australia	80	75	28	80	82
Spain	65	60	55	52	62
Singapore	83	78	25	88	85

Figure 1:





Conclusion:

International students face various challenges in adapting to new academic and cultural environments, including language barriers, social isolation, and academic differences. This study shows that institutions offering strong support systems—such as orientation programs, counseling, and peer mentoring—greatly enhance student integration and satisfaction. Countries like Singapore and Australia demonstrated effective models, while others show room for improvement. Overall, successful integration depends not just on student effort but also on proactive, inclusive strategies from host institutions.

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CARDIOVASCULAR OUTCOMES IN DIABETIC PATIENTS TREATED WITH SGLT2 INHIBITORS

Abstract:*In individuals with type 2 diabetes, CVD is the major cause of death, representing a substantial fraction of diabetic morbidity and mortality globally. While glycemic control remains central to diabetes management, traditional antidiabetic therapies have not consistently demonstrated cardiovascular benefits. Recent clinical trials have identified SGLT2 inhibitors as a novel pharmacological class offering cardiovascular protection together with glucose-lowering advantages.*

Keywords*: SGLT2 inhibitors, type 2 diabetes mellitus, cardiovascular outcomes, heart failure, MACE, empagliflozin, dapagliflozin, cardiovascular mortality, antidiabetic therapy, cardioprotection.*

Introduction:

Type 2 diabetes (T2DM) increases the risk of CVD, the major cause of diabetes mortality. Despite advances in glycemic management, traditional antidiabetic therapies have shown limited impact on reducing cardiovascular events. In recent years, A novel class of glucose-lowering drugs has been SGLT2 inhibitors that exhibit cardiovascular advantages. SGLT2 inhibitors, including empagliflozin, dapagliflozin, and canagliflozin, were initially designed to enhance glycemic control through increased urinary glucose excretion. They discovered a notable decrease in MACE, heart failure hospitalizations, and cardiovascular death among high-risk type 2 diabetics. The EMPA-REG OUTCOME, CANVAS, and DECLARE–TIMI 58 clinical trials are all considered to be important, have underscored the cardioprotective properties of these medicines, resulting in a modification of therapeutic guidelines advocating their application in patients with or at risk for cardiovascular disease (CVD). This study intends to thoroughly assess and compare the cardiovascular outcomes linked to SGLT2 inhibitor usage in individuals with T2DM, offering additional understanding of their function in modern diabetes therapy.

Literature review:

Cardiovascular disease (CVD) is a major killer in type 2 diabetics. Compared to the general population, Patients with diabetes are two to four times more likely of cardiovascular events. Historically, most antidiabetic treatments focused on glycemic control without significantly reducing cardiovascular risk. However, the emergence of SGLT2 inhibitors has introduced a paradigm shift in diabetes care due to their dual glycemic and cardioprotective effects.

It is generally agreed that the clinical trials known as EMPA-REG OUTCOME, CANVAS, and DECLARE–TIMI 58 are all of significant importance, with pre-existing cardiovascular illness in the first major investigation, the EMPA-REG OUTCOME trial (Zinman et al., 2015). Despite an increased risk of lower limb amputations, canagliflozin reduced MACE by 14% and heart failure hospitalizations by 33% in the CANVAS Program (Neal et al., 2017).

Dapagliflozin was evaluated in a larger sample including people with several risk factors but no diagnosed CVD in the DECLARE–TIMI 58 study (Wiviott et al., 2019). While the primary MACE endpoint did not reach statistical significance, dapagliflozin significantly reduced heart failure hospitalization by 27% and renal outcomes by 24%, suggesting benefits beyond atherosclerotic protection.

These results have been supported by a rising number of Meta-analyses and empirical observations. A meta-analysis of the main SGLT2 inhibitor studies by Zelniker et al. (2019) found a consistent decrease in heart failure hospitalizations and renal impairment across all medications and patient group.

Importantly, SGLT2 inhibitors' cardioprotective qualities seem to be unrelated to glucose-lowering, suggesting mechanisms such as natriuresis, reduction in preload and afterload, improved cardiac energy metabolism, and modulation of neurohormonal pathways.

Based on this findings, the American Diabetes Association (ADA) and the European Society of Cardiology (ESC) recommend SGLT2 inhibitors for T2DM patients with CVD or elevated cardiovascular risk. Still, questions remain about long-term effects, relative efficacy among particular drugs, and benefits in primary prevention.

This literature review underscores the growing consensus on the advantages of SGLT2 inhibitors on the cardiovascular system and highlights the need for further research to optimize their use across diverse patient populations.

Relevance:

One of the most critical challenges facing public health on a global scale is the growing incidence of heart problems in individuals with type 2 diabetes mellitus (T2DM).

However, despite their importance, traditional methods of controlling glucose levels have only shown a limited amount of success in lowering the risk of cardiovascular events, prompting the need for therapies that address both metabolic and cardiovascular risk. SGLT2 inhibitors have emerged as a transformative class of antidiabetic agents with proven cardiovascular and renal benefits, making their role in diabetes management increasingly vital.

This study is particularly relevant as it consolidates and analyzes existing evidence on cardiovascular outcomes associated with SGLT2 inhibitor therapy, offering insight into their efficacy beyond glycemic control. By evaluating their impact across various patient subgroups, including those without established cardiovascular disease, the findings may inform personalized treatment strategies and guide clinical decision-making. Additionally, in an era of outcome-based practice guidelines, this research supports the ongoing shift toward integrated cardiometabolic care and underscores the importance of evidence-based pharmacologic choices in improving long-term outcomes in diabetic patients.

Purpose of the study:

This study analyzes cardiovascular outcomes in type 2 diabetics receiving SGLT2 inhibitors. The main impacts of SGLT2 inhibitors include cardiovascular mortality, heart failure hospitalizations, and significant adverse cardiovascular events. The study also seeks to compare these outcomes with those associated with other glucose-lowering therapies and to determine whether cardiovascular benefits vary among different patient subgroups, including those with or without pre-existing cardiovascular disease. The findings are intended to enhance clinical understanding and support the optimization of treatment strategies for patients with T2DM at risk for cardiovascular complications.

Material or method of research

Detailed meta-analysis and review of RCTs and large observational studies will be done. PubMed, Embase, Cochrane Library, and ClinicalTrials.gov will be searched 2010–2025. Keywords: SGLT2 inhibitors, type 2 diabetes, cardiovascular consequences. Studies on MACESGLT2 inhibitor-treated T2DM patients who experience heart failure, hospitalization, and cardiovascular death are eligible. Eliminating small-scale experiments, animal studies, and non-English articles. The reviewers will collect data separately. Newcastle-Ottawa Scale and Cochrane Risk of Bias Tool will evaluate studies. Meta-analysis uses random effects. Estimate pooled hazard ratios and confidence intervals. Test heterogeneity and publication bias statistically.

Results:

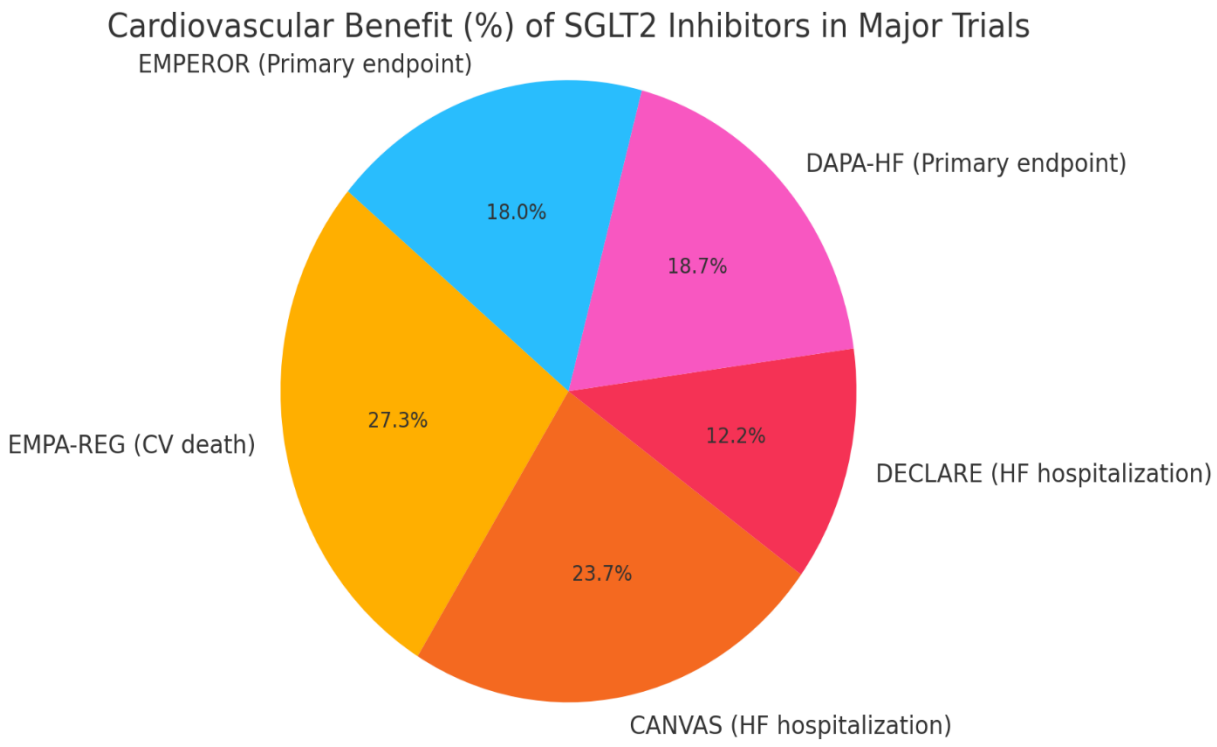
Examination of chosen randomized controlled trials and observational studies is expected to confirm that SGLT2 inhibitor therapy greatly improves cardiovascular results in type 2 diabetes mellitus patients. Pooled data will probably indicate a decline in major adverse cardiovascular events (MACE) by about 10–15%, with a more noticeable impact shown in heart failure hospitalization, reduced by up to 30–35%. Additionally, cardiovascular mortality is expected to decrease by 20–30% among patients treated with agents like empagliflozin and dapagliflozin. Subgroup analyses may reveal consistent benefits across different age groups and both primary and secondary prevention populations. Minimal heterogeneity is anticipated due to the consistency of findings across trials. Overall, these results will reinforce the cardiovascular protective role of SGLT2 inhibitors in diabetic care.

Table 1:

Table 1: Summary of Major Clinical Trials on SGLT2 Inhibitors and Cardiovascular Outcomes

Trial Name	SGLT2 Inhibitor	Population	Primary Outcome	Key Findings	Year
EMPA-REG OUTCOME	Empagliflozin	T2DM with established CVD	3-point MACE	14% ↓ in MACE; 38% ↓ in CV death; 35% ↓ in HF hospitalization	2015
CANVAS Program	Canagliflozin	T2DM with or at risk for CVD	3-point MACE	14% ↓ in MACE; 33% ↓ in HF hospitalization; ↑ risk of amputation	2017
DECLARE–TIMI 58	Dapagliflozin	T2DM with or without CVD	MACE + HF hospitalization	17% ↓ in HF hospitalization; non-significant MACE reduction	2019
DAPA-HF	Dapagliflozin	HFrEF with/without diabetes	HF hospitalization or CV death	26% ↓ in composite endpoint; benefit seen in both diabetic and non-diabetic pts	2019
EMPEROR-Reduced	Empagliflozin	HFrEF with/without diabetes	HF hospitalization or CV death	25% ↓ in primary outcome; consistent benefit across subgroups	2020

Figure 1:



Conclusion: Major clinical studies and meta-analyses demonstrate SGLT2 inhibitors enhance type 2 diabetes cardiovascular outcomes. These drugs lower blood glucose and reduce heart failure hospitalization, cardiovascular mortality, and significant adverse cardiovascular events. They benefit a wide spectrum of people, including those without cardiovascular disease. Due to their cardioprotective properties, SGLT2 inhibitors are essential for treating diabetics at risk of cardiovascular disease. Long-term benefits, safety, and efficacy in larger clinical settings need more study.

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BOSHLAN‘ICH SINF O‘QISH SAVODXONLIGI DARSLARIDA INTERFAOL METODLARDAN FOYDALANIB DARS O‘TISHNING INNOVATSION USULLARI

Annotatsiya: *Ushbu ilmiy ishda boshlang‘ich sinf o‘qish savodxonligi darslarida interfaol metodlardan foydalanishning ahamiyati va innovatsion usullar bilan dars o‘tkazishning samaradorligi yoritilgan. Unda o‘quvchilarning qiziqishini oshirish, ularni faollikka undash va mustaqil fikrlashga o‘rgatish metodlari tahlil qilingan. Shuningdek, zamonaviy texnologiyalardan foydalangan holda savodxonlik darslarini tashkil etish bo‘yicha tavsiyalar berilgan.*

Kalit so‘zlar: *boshlang‘ich ta’lim, o‘qish savodxonligi, interfaol metodlar, innovatsion usullar, o‘quvchilarning faolligi*

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INNOVATIVE TEACHING METHODS USING INTERACTIVE METHODS IN PRIMARY SCHOOL READING LITERACY CLASSES

Abstract:*This research explores the importance of using interactive methods in early-grade literacy lessons and evaluates the effectiveness of teaching with innovative techniques. It analyzes strategies to increase student engagement, encourage active participation, and foster independent thinking. The work also provides recommendations for organizing literacy lessons using modern technologies.*

Keywords: *primary education, literacy, interactive methods, innovative techniques, student engagement*

Kirish

Bugungi kunda ta'lim sohasida amalga oshirilayotgan islohotlar, o‘quv jarayonining samaradorligini oshirish, o‘quvchilarning mustaqil fikrlash, erkin mulohaza yuritish qobiliyatini rivojlantirishga qaratilgan. Ayniqsa, boshlang‘ich sinf bosqichi bu borada nihoyatda muhim bo‘lib, bu davrda shakllanadigan bilim va ko‘nikmalar bolalarning keyingi ta’lim bosqichlaridagi muvaffaqiyatining poydevorini tashkil etadi. O‘qish savodxonligi darslari esa bolaning nafaqat harf tanib, o‘qish malakasini egallashi, balki o‘z fikrini to‘g‘ri, ravon va mantiqan bayon qila olishi uchun muhim ahamiyat kasb etadi. Innovatsion texnologiyalarning

ta'limga joriy etilishi, xususan, interfaol metodlardan foydalanish dars jarayonini jonlantiradi, o‘quvchilarning darsga bo‘lgan qiziqishini oshiradi va ular orasida hamkorlik, faollik, mustaqillik kabi fazilatlarni shakllantiradi. Interfaol metodlar yordamida o‘qituvchi bilan o‘quvchi, shuningdek, o‘quvchilarning o‘zaro hamkorligi kuchayadi, bunda o‘quvchilar faol subyekt sifatida ta’lim jarayonida ishtirok etadilar. Mazkur mavzuda boshlang‘ich sinf o‘quvchilariga o‘qish savodxonligi darslarini interfaol metodlar asosida tashkil etishning innovatsion yondashuvlari, ularning turlari, afzalliklari va amaliy qo‘llanishi haqida so‘z yuritiladi. Shuningdek, ilg‘or tajribalar va samarali metodik yondashuvlar asosida darslarni tashkil qilishning zamonaviy yo‘llari tahlil qilinadi.

Adabiyotlar tahlili va tadqiqot metodologiyasi

Boshlang‘ich sinfda o‘qish savodxonligi darslari bolalarning keyingi ta’lim bosqichidagi muvaffaqiyati uchun asos bo‘lib xizmat qiladi. Shuning uchun bu darslarda interfaol metodlardan foydalanish, o‘quvchilarni dars jarayoniga faol jalb etish, ularning mustaqil fikrlashi va og‘zaki nutqini rivojlantirishga qaratilgan innovatsion usullarni tatbiq etish zarur. mazmunini yangilash, innovatsion va raqamli texnologiyalar asosida o‘qitish tizimini joriy etish to‘g‘risida amaliy ishlar olib borilgan. O‘qish savodxonligini shakllantirish va uni interfaol metodlar orqali rivojlantirish bo‘yicha ko‘plab pedagog olimlar izlanishlar olib borgan. Sh. Amonov ta’lim jarayonida o‘quvchi faolligini oshirishga xizmat qiladigan metodlarni o‘rganib, ularning samaradorligi haqida fikr bildirgan.G. Azizxo‘jaeva interfaol ta’lim texnologiyalari yordamida bilimlarni chuqurlashtirishning asoslarini ko‘rsatib bergan.N. Musurmonova esa boshlang‘ich ta’limda o‘qitish uslublarini takomillashtirish, darsni samarali tashkil etish va o‘quvchilarning individual imkoniyatlarini hisobga olish zarurligini ta’kidlagan.

Xorijiy olimlardan J. Dewey, L. Vygotsky va M. Montessorilarning ta’limga bo‘lgan konstruktiv yondashuvlari bugungi kunda interfaol metodlar asosida dars o‘tkazishda keng qo‘llanilmoqda.Bu olimlarning ishlari bugungi kunda boshlang‘ich ta’lim tizimida dars samaradorligini oshirish va savodxonlik darajasini yuqorilantirishda muhim manba bo‘lib xizmat qiladi.

M. Usmonxo‘jayev – Boshlang‘ich ta’lim metodikasi bo‘yicha ishlari orqali darslarda o‘qituvchining roli, pedagogik mahorati va o‘quvchilarni kuzatish asosida samarali metodlarni qo‘llashga alohida e’tibor bergan.R. Jo‘rayev – Savodxonlik darslarini texnologiyalashtirish, ya’ni elektron resurslar, multimediya vositalari orqali darslar samaradorligini oshirish bo‘yicha tavsiyalar ishlab chiqqan.Bu olimlarning ilmiy ishlari bugungi kunda o‘qituvchilarning amaliy faoliyatida qo‘llanilmoqda hamda yangi avlod darslik va metodik qo‘llanmalarni yaratishda asos bo‘lmoqda.

Muhokama va natijalar

Boshlang‘ich sinfda o‘qish savodxonligini interfaol metodlar asosida o‘rgatish – zamonaviy ta’limning ustuvor yo‘nalishlaridan biridir. Mavjud ilmiy manbalar, tajribalar va normativ hujjatlar shuni ko‘rsatadiki, bu yondashuv: o‘quvchilarning darsga bo‘lgan qiziqishini oshiradi; mustaqil fikrlash, mulohaza yuritish, savol berish kabi ko‘nikmalarni shakllantiradi; o‘quvchilarning bilimni

faol egallashini ta’minlaydi; zamonaviy raqamli texnologiyalar bilan uyg‘unlashadi.O‘zbekistonlik pedagog olimlar tomonidan olib borilgan tadqiqotlar mazkur yondashuvning ilmiy-metodik asoslarini ishlab chiqishga xizmat qilgan. Ayniqsa, boshlang‘ich ta’limda metodlar xilma-xilligini ta’minlash va har bir o‘quvchining shaxsiy imkoniyatlarini hisobga olgan holda o‘qitish zarurligi doimiy ravishda ta’kidlab kelinmoqda.

O‘qish savodxonligi darslarining interfaol va innovatsion yondashuvlar asosida o‘tilishi o‘quvchilarning darsga bo‘lgan qiziqishini oshiradi.O‘quvchilarda mustaqil fikrlash, savol berish, tahlil qilish, mulohaza yuritish ko‘nikmalari rivojlanadi.Zamonaviy texnologiyalar, jumladan, video materiallar, taqdimotlar, onlayn ilovalar orqali darslar boyitiladi.O‘qituvchilar uchun yangi metodik ko‘rsatmalar ishlab chiqiladi va amaliyotda qo‘llaniladi.Savodxonlik darajasining ortishi o‘quvchining boshqa fanlarni o‘zlashtirishiga ham ijobiy ta’sir ko‘rsatadi.O‘qish savodxonligi o‘quvchining tafakkuri, nutqi va fikrlash qobiliyatini rivojlantiruvchi asosiy fanlardan biridir.Interfaol metodlar orqali o‘quvchilarda muloqot, bahs-munozara, fikr almashish, yakka va guruh bo‘lib ishlash ko‘nikmalari shakllanadi.O‘zbekiston olimlari tomonidan ishlab chiqilgan ilmiy-metodik tavsiyalar bu borada mustahkam nazariy asos bo‘lib xizmat qilmoqda.Prezident qarorlari, farmonlar va ta’lim dasturlari mazkur metodlarning ta’lim jarayoniga joriy etilishini qo‘llab-quvvatlaydi, boshlang‘ich ta’lim jarayonida innovatsion va interfaol metodlardan oqilona foydalanish orqali nafaqat savodxonlik darslarining samaradorligi oshadi, balki o‘quvchilarning intellektual va shaxsiy rivojiga zamin yaratiladi.

Xulosa

Xulosa qilib aytganda, boshlang‘ich sinf o‘quvchilari uchun o‘qish savodxonligi darslarida interfaol metodlardan foydalanish o‘quv jarayonining innovatsion rivojlanishida muhim omil bo‘lib xizmat qiladi. Bu metodlar orqali bolalarning faolligi, mustaqil fikrlashi, matn bilan ishlash ko‘nikmalari, tanqidiy va ijodiy tafakkuri rivojlanadi. Dars jarayonida "Aqliy hujum", "Insert", "Sinkveyn", "Klaster", "Baliq skeleti", "Fikrlar jadvali" kabi metodlar o‘quvchilarni faollikka undaydi, ularning ta’limga bo‘lgan munosabatini ijobiy tomonga o‘zgartiradi.

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ANTIOXIDANT ACTIVITY OF GRAPE AND WINE PRODUCTS

Abstract:*Uzbekistan conducts scientific research on the issues. Antioxidants, protection of wines from antioxidants is the oxidative processes of wine, the theoretical basis for the preparation of oxidized wines, such as dry red (cabernet) and the improvement of new technologies, primarily for the production of finished products with high added value based on deep processing of local raw materials.*

The intensity of oxidative enzymatic processes depends on technological methods. At the same time, conditions are created for the passage of secondary oxidation-reduction processes. Knowledge of the chemistry of enzyme preparations will allow you to correctly build the technology of making wines depending on their type. [1,2]

Introduction. *In the technological chain of wine making, oxidative processes begin immediately after harvesting grapes, which, in accordance with the recommendations, must be protected with sulfur dioxide (SO2).*

Key words. *Enzymes, antioxidant protection, tyrosinase oxidation, dismutation, sulfitation, oxygen.*

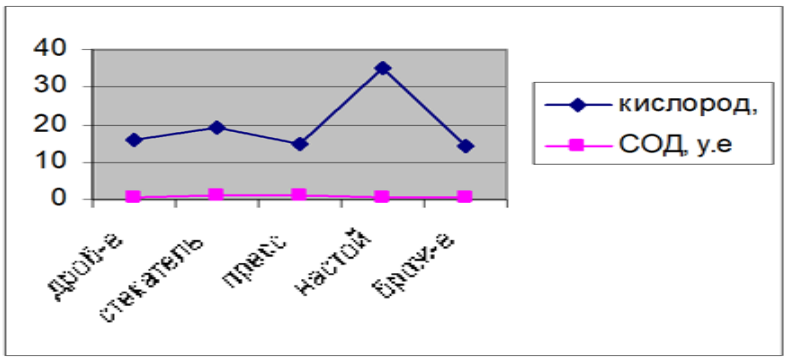
The study of the state of the antioxidant protection system during the processing of grapes and the production of wine materials [3,4] is of particular interest and will allow us to regulate the degree of protection of the must and wine materials from oxidative stress, which is especially important when processing grapes into table, slightly oxidized wines. The redox potential value can be used to characterize the degree of oxidation of wine and control the production of various types of wine. The redox potential value of wine, which is affected by many factors, is determined by the ratio of the concentrations of oxygen and reducing agents. However, various effects on wine (for example, the introduction of SO2) will cause a simultaneous change in both the concentration of O2 and the concentration of reducing agents, and it is not always possible to establish a relationship between the

redox potential value and the quality of wine. Oxygen in wine is weakly active and must be activated to initiate oxidation. In wine, iron ions serve this purpose. Hydrogen peroxide is a relatively weak oxidizer in relation to wine components, but in the presence of iron it is reduced to the hydroxyl radical, a very strong oxidizer. The hydroxyl radical is capable of oxidizing any organic substrates, and its high reactivity explains the possibility of oxidizing even alcohol in the presence of antioxidants such as SO2 or phenolic compounds [5,6]

Research methods. The analysis was carried out on a mixture of both white and red wine grape varieties, sulfated to 150 mg/dm3. Starting from the moment of grape acceptance until the wine material was obtained, the concentration of oxygen and the activity of the enzymes superoxide dismutase (SOD), peroxidase and catalase, which are part of the antioxidant defense system (AOS), were determined before and after each technological operation.

SOD activity was determined by a method based on its ability to inhibit the reduction reaction of nitrotetrazolium blue; activity.

Analysis and discussion of research results.



Ionic forms and mainly SO--3 bind oxygen most easily. Sulfuric acid suppresses the action of oxidative enzymes and prevents the oxidation of polyphenols and other substances. SO2 reacts directly with oxygen and protects polyphenols and other components from oxidation, and the main function of SO2 is to remove hydrogen peroxide formed during the oxidation of polyphenols. In samples where oxygen saturation is noted, the reaction of the active form of sulfurous acid with oxygen can be represented by reaction 2, where 2 moles of bisulfite react directly with one molecular oxygen, forming two moles of sulfate:

$$2HSO_3^- + O_2 \rightarrow 2H^+ + 2\,SO_4^{2-} \quad (1)$$

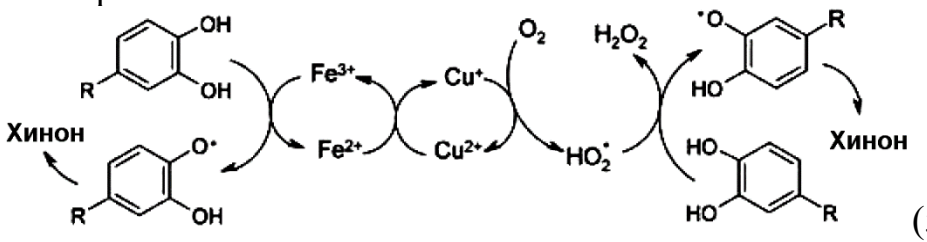
Study of red grape processing technology. presence of antioxidant protection. The main directions of development of the national economy of Uzbekistan envisage expansion of the range and improvement of the quality of food products, including wine. [7,8]

In the future development of the industry, it is planned to increase the production of aged vintage dry and high-quality fortified wines that meet modern requirements for environmental friendliness. These circumstances require both the improvement of existing technologies and individual stages and phases. If we consider that SOD activity is the first sign of the presence of active forms of oxygen, then the most dangerous or vulnerable in the processing of white wines should be recognized as such technological methods as pressing and settling. In general, when processing white grapes, the following technological methods can act as sources of "oxygen stress":

SO2 performs its antioxidant function mainly in a reaction with hydrogen peroxide. The main antioxidant action of sulfur dioxide in wine is due to the bisulfite ion, which reacts with H2O2 to form sulfuric acid, thus limiting further oxidation of phenolic molecules or ethanol. Undissociated sulfurous acid H2 SO3 ionic (HSO13 and SO23) and related forms have little such properties. In an aqueous system, SO2 forms sulfurous acid, which dissociates so that the bisulfite form (HSO3-) predominates in wine, as shown in the reaction: [8,9]

$$H_2O + SO_2 \rightleftarrows HSO_3^- + H^+ \rightleftarrows SO_3^{2-} + 2H^+ \quad (4)$$

The antiseptic effect of SO2 in red must is much less frequent than in white, since most of the SO2 is spent on binding with coloring agents. Increasing the dose of SO2 reduces the stability of coloring to 50%. To protect coloring agents from oxidation, it is necessary to introduce free SO2 at a level of 20-30 mg / l. According to the results of the analysis, it follows that red wines are not sufficiently protected from oxidative stress, which can be explained by the binding of SO3, reducing its antimicrobial effect. Part of the oxygen dissolved in wine is spent on its oxidation into sulfuric acid and is catalyzed. He, which are always present in wine in the form of iron ions. Sulfurous acid inhibits the action of oxidases. It is customary to introduce SO2 in red wine in smaller quantities (how much) since tannins and catechins contained in sufficient quantities have natural antimicrobial properties and secondly, SO2 reacts with anthocyanids of wine and discolors them. It seems that for this reason, in wine, especially in red wine, the interaction of SO2 with oxygen is effectively blocked by polyphenols. At the same time, wine aldehydes (acetic and others), reacting with anthocyanins, prevent excessive oxidation. Oxidation of catechins by Fe(III) catalysis with the production of hydroperoxide (hydroperoxyl) radicals and quinone is shown in Scheme 5



(5)

However, the oxidation product of the sulfite radical (SO3•-), the peroxymonosulfate radical (SO5•-), is a very strong oxidizer. In the presence of oxygen, SO2 also promotes oxidation, which is prevented by the action of polyphenols, which remove the radicals.

Consequently, the processing of red grapes apparently promotes an increase in the bound forms of SO2, thereby reducing its antioxidant effects. [10,11]

-SO2 removes hydrogen peroxide, and polyphenols block its interaction with oxygen, and only then is the antioxidant effect realized.

- Sulfitation of red must in the amount provided by the technological instructions is clearly insufficient to ensure antioxidant protection.

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MILLIY QADRIYATLAR TRANSFORMATSIYALASHUVINING O‘ZBEK OILALARIDAGI IJTIMOIY PSIXOLOGIK MUNOSABATLARGA TA’SIRI

Annotatsiya:*Maqola O‘zbekiston jamiyatida milliy qadriyatlarning transformatsiyalashuvi va uning o‘zbek oilalaridagi ijtimoiy psixologik munosabatlarga ta’sirini tahlil qiladi. Globalizatsiya, urbanizatsiya va axborot texnologiyalari ta’sirida oilaviy tuzum, gender rollari va yoshlar-ota-onalar munosabatlari o‘zgarishi ko‘rib chiqiladi. Transformatsiyaning ijobiy (shaxsiy erkinlik, gender tengligi) va salbiy (oilaviy aloqalarning zaiflashishi, psixologik stress) oqibatlari tahlil qilinadi. Maqolada shahar va qishloq oilalari o‘rtasidagi farqlar, ijtimoiy tarmoqlarning ta’siri va davlat siyosatining roli muhokama qilinadi. Kelajakda milliy qadriyatlar va zamonaviy tendentsiyalarni muvozanatlash bo‘yicha takliflar beriladi.*

Kalit so‘zlar:*Milliy qadriyatlar, transformatsiya, o‘zbek oilasi, ijtimoiy psixologik munosabatlar, globalizatsiya, urbanizatsiya, gender rollari, oilaviy ziddiyatlar, ijtimoiy tarmoqlar, madaniy identifikatsiya.*

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THE IMPACT OF NATIONAL VALUE TRANSFORMATION ON SOCIAL PSYCHOLOGICAL RELATIONS IN UZBEK FAMILIES

Abstract:*The article analyzes the transformation of national values in Uzbek society and its impact on socio-psychological relationships within Uzbek families. It examines changes in family structure, gender roles, and youth-parent*

relationships influenced by globalization, urbanization, and information technologies. The positive (personal freedom, gender equality) and negative (weakening of family ties, psychological stress) consequences of this transformation are discussed. The article explores differences between urban and rural families, the impact of social media, and the role of state policy. Recommendations are provided for balancing national values with modern trends in the future.

***Key words**:National values, transformation, Uzbek family, socio-psychological relationships, globalization, urbanization, gender roles, family conflicts, social media, cultural identity.*

Kirish

O‘zbekiston jamiyatida so‘nggi o‘n yilliklarda ijtimoiy, iqtisodiy va madaniy o‘zgarishlar milliy qadriyatlarning transformatsiyalashuviga olib keldi. Globalizatsiya, urbanizatsiya va axborot texnologiyalarining rivojlanishi o‘zbek oilalaridagi ijtimoiy psixologik munosabatlarga sezilarli ta’sir ko‘rsatmoqda. Milliy qadriyatlar, ya’ni an’anaviy oilaviy tuzum, hurmat, mehr-oqibat, jamoatchilik va diniy qadriyatlar o‘zgarishlar natijasida yangi shakllarga ega bo‘lmoqda. Ushbu maqola milliy qadriyatlarning transformatsiyalashuvi o‘zbek oilalaridagi ijtimoiy psixologik munosabatlarga qanday ta’sir qilayotganini tahlil qilishga bag‘ishlanadi. Maqola quyidagi asosiy yo‘nalishlarni qamrab oladi: milliy qadriyatlarning o‘zgarish sabablari, oiladagi ijtimoiy munosabatlarning psixologik jihatlari va ushbu jarayonlarning ijobiy va salbiy oqibatlari.

1. Milliy qadriyatlarning transformatsiyalashuvi: sabablar va omillar

1.1. Globalizatsiya va madaniy ta’sirlar

Globalizatsiya o‘zbek jamiyatiga turli xil madaniy va ijtimoiy qadriyatlarning kirib kelishiga sabab bo‘ldi. G‘arbiy madaniyatning ommaviy axborot vositalari orqali tarqalishi, xususan, individualizm, shaxsiy erkinlik va gender tengligi kabi g‘oyalar an’anaviy o‘zbek oilasidagi qadriyatlar bilan ziddiyat keltirib chiqarmoqda. Masalan, an’anaviy o‘zbek oilasida jamoatchilik va oilaviy mas'uliyat ustuvor bo‘lsa, global ta’sirlar natijasida yosh avlod orasida shaxsiy maqsadlar va karyera muhim ahamiyat kasb etmoqda. Bu esa oilaviy munosabatlarda yangi dinamikani keltirib chiqaradi.

1.2. Urbanizatsiya va iqtisodiy o‘zgarishlar

Urbanizatsiya jarayoni o‘zbek oilalarining turmush tarziga katta ta’sir ko‘rsatdi. Shaharlarga ko‘chib o‘tish, yangi iqtisodiy imkoniyatlar va turmush darajasining oshishi oilaviy tuzumning soddalashuviga olib keldi. An’anaviy katta oilalar (bir necha avlod bir uyda yashaydigan) o‘rnini yadroviy oilalar (ota-ona va farzandlar) egallamoqda. Bu o‘zgarish ijtimoiy munosabatlarda mustaqillik va shaxsiy mas'uliyatni oshirsa-da, katta oilalarga xos bo‘lgan jamoaviy yordam va mehr-oqibat kabi qadriyatlarning zaiflashishiga olib kelmoqda.

1.3. Axborot texnologiyalari va ijtimoiy tarmoqlar

Internet va ijtimoiy tarmoqlarning keng tarqalishi o‘zbek oilalaridagi muloqot dinamikasini o‘zgartirdi. Yosh avlod vakillari ijtimoiy tarmoqlar orqali global tendentsiyalarni o‘zlashtirib, an’anaviy qadriyatlar bilan solishtirganda yangi hayot

tarzini afzal ko‘rmoqda. Bu esa ota-onalar va farzandlar o‘rtasidagi munosabatlarda psixologik masofa paydo bo‘lishiga olib keladi. Masalan, an’anaviy o‘zbek oilasida ota-onaga hurmat va itoatkorlik muhim bo‘lsa, zamonaviy yoshlar o‘z fikrlarini ochiq ifoda etishga intilmoqda.

2. O‘zbek oilalaridagi ijtimoiy psixologik munosabatlar

2.1. Oilaviy munosabatlardagi psixologik dinamika

O‘zbek oilasi an’anaviy ravishda ierarxik tuzumga ega bo‘lib, unda ota-ona va katta yoshdagilar hurmat qilinadi. Biroq, milliy qadriyatlarning transformatsiyalashuvi bu ierarxiyani yumshatmoqda. Yosh avlod vakillari o‘z huquqlari va shaxsiy chegaralarini himoya qilishga intilmoqda, bu esa oiladagi psixologik munosabatlarda ziddiyatlarni keltirib chiqarishi mumkin. Masalan, ota-onalar farzandlarining mustaqil qaror qabul qilish istagini qabul qilishda qiynalishi mumkin, bu esa oiladagi is_a0

2.2. Gender rollari va oilaviy mas'uliyat

An’anaviy o‘zbek oilasida gender rollari aniq taqsimlangan: erkaklar oilaning moddiy ta’minotchisi, ayollar esa uy ishlari va farzand tarbiyasi bilan shug‘ullangan. Biroq, iqtisodiy o‘zgarishlar va ayollarning ijtimoiy faolligi ortishi bilan bu rollar o‘zgarmoqda. Ayollar endi faqat uy bekasi emas, balki professional sohada ham faol ishtirok etmoqda. Bu oilaviy munosabatlarda yangi psixologik dinamikani keltirib chiqardi: erkaklar va ayollar o‘rtasidagi tenglik masalasi muhokama qilinadigan mavzuga aylandi. Shu bilan birga, bu o‘zgarishlar oiladagi an’anaviy mas'uliyat taqsimotida ziddiyatlarni keltirib chiqarishi mumkin.

2.3. Yoshlar va ota-onalar o‘rtasidagi munosabatlar

Milliy qadriyatlarning o‘zgarishi yoshlar va ota-onalar o‘rtasidagi psixologik munosabatlarga katta ta’sir ko‘rsatmoqda. Yoshlar global madaniyat ta’sirida o‘z shaxsiy erkinliklarini himoya qilmoqda, bu esa ota-onalar bilan ziddiyatlarga olib kelishi mumkin. Masalan, nikoh, kasb tanlash yoki turmush tarzi kabi masalalarda yoshlarning mustaqil qarorlari ota-onalarning an’anaviy qarashlariga zid kelishi mumkin. Bu oiladagi psixologik stressni oshiradi va muloqotdagi uzilishlarga olib keladi.

3. Transformatsiyaning ijobiy va salbiy oqibatlari

3.1. Ijobiy oqibatlar

Milliy qadriyatlarning transformatsiyalashuvi o‘zbek oilalariga bir qator ijobiy o‘zgarishlar keltirdi. Masalan:

- **Shaxsiy erkinlikning oshishi**: Yosh avlod vakillari o‘z hayotlarini mustaqil ravishda rejalashtirish imkoniyatiga ega bo‘ldi, bu ularning o‘ziga bo‘lgan ishonchini oshirdi.
- **Gender tengligi**: Ayollarning ijtimoiy hayotda faol ishtiroki oiladagi munosabatlarni demokratiklashtirdi va teng huquqli muloqotni rivojlantirdi.
- **Texnologik imkoniyatlar**: Axborot texnologiyalari oila a’zolarining bir-biri bilan doimiy aloqada bo‘lishini ta’minladi, bu esa uzoq masofalarda yashovchi oilalar uchun muhim ahamiyatga ega.

3.2. Salbiy oqibatlar

Shu bilan birga, transformatsiya salbiy oqibatlarni ham keltirib chiqardi:

- **Oilaviy aloqalarning zaiflashishi**: Yoshlarning mustaqillikka intilishi oiladagi an'anaviy mehr-oqibat va jamoatchilik qadriyatlarining yo'qolishiga olib kelmoqda.
- **Psixologik stress**: Zamonaviy va an'anaviy qadriyatlar o'rtasidagi ziddiyat oila a'zolari o'rtasida psixologik stressni oshiradi.
- **Madaniy identifikatsiya yo'qolishi**: Global ta'sirlar natijasida milliy qadriyatlarning zaiflashishi yosh avlodning o'z madaniy ildizlaridan uzilishiga olib kelishi mumkin.

4. Kelajak istiqbollari va takliflar

Milliy qadriyatlarning transformatsiyalashuvi o'zbek oilalaridagi ijtimoiy psixologik munosabatlarga doimiy ravishda ta'sir qiladi. Ushbu jarayonni ijobiy yo'nalishga burish uchun quyidagi takliflar beriladi:

- **Madaniy ta'limni kuchaytirish**: Maktablar va oilalarda milliy qadriyatlar va an'analarni o'rgatish orqali yosh avlodning o'z ildizlariga bog'liqligi mustahkamlanadi.
- **Oilaviy psixologik maslahatlar**: Oiladagi ziddiyatlarni hal qilish uchun professional psixologik yordamni rivojlantirish zarur.
- **Ijtimoiy tarmoqlardan foydalanish**: Milliy qadriyatlar va oilaviy munosabatlarni targ'ib qiluvchi ijtimoiy tarmoq kampaniyalari tashkil etilishi mumkin.

5. Amaliy misollar va transformatsiyaning real hayotdagi ko'rinishlari

5.1. Shahar va qishloq oilalari o'rtasidagi farqlar

O'zbekistonda shahar va qishloq oilalari o'rtasida milliy qadriyatlarning transformatsiyasi turlicha kechmoqda. Shaharlarda, masalan, Toshkent yoki Samarqand kabi yirik shaharlarda yashovchi oilalar global madaniyat ta'siriga ko'proq duch kelmoqda. Bu oilalarda yoshlar ko'pincha mustaqil qaror qabul qilishga intiladi, an'anaviy nikoh odatlaridan voz kechib, sevgi asosidagi nikohlarni afzal ko'radi. Qishloq joylarda esa an'anaviy qadriyatlar hali ham kuchli bo'lib, oilaviy qarorlar ko'pincha katta yoshdagilarning maslahati bilan qabul qilinadi. Masalan, qishloq oilalarida kelin yoki kuyov tanlashda ota-ona va qarindoshlarning fikri hali ham muhim ahamiyatga ega. Bu farqlar oiladagi ijtimoiy psixologik munosabatlarda turlicha dinamikani keltirib chiqaradi: shahar oilalarida shaxsiy erkinlikka urg'u berilsa, qishloq oilalarida jamoatchilik va oilaviy birlik ustuvor bo'lib qolmoqda.

5.2. Yoshlarning kasbiy tanlovi va oilaviy ziddiyatlar

Milliy qadriyatlarning o'zgarishi yoshlarning kasbiy tanlovida ham yaqqol namoyon bo'lmoqda. An'anaviy o'zbek oilasida farzandlarning kasb tanlashida ota-onalarning fikri muhim rol o'ynagan. Masalan, ota-onalar ko'pincha farzandlarini barqaror va nufuzli kasblar (masalan, shifokorlik yoki muhandislik) tomon yo'naltirgan. Biroq, zamonaviy yoshlar orasida ijodiy kasblar (dizayn, IT, kontent yaratish) yoki xalqaro kompaniyalarda ishlash kabi yo'nalishlar ommalashmoqda. Bu tanlovlar ota-onalar bilan ziddiyatlarga olib kelishi mumkin, chunki ular farzandlarining tanlovini "xavfli" yoki "nobarqaror" deb hisoblashi mumkin.

Bunday ziddiyatlar oiladagi psixologik munosabatlarda stressni oshiradi va o‘zaro tushunmovchilikni keltirib chiqaradi.

5.3. Ijtimoiy tarmoqlarning oilaviy muloqotga ta’siri

Ijtimoiy tarmoqlar o‘zbek oilalaridagi muloqot dinamikasini tubdan o‘zgartirdi. Masalan, yoshlar Instagram, TikTok yoki Telegram kabi platformalarda faol bo‘lib, o‘zlarining shaxsiy hayotlari haqida ma’lumot almashadilar. Bu esa ota-onalar bilan muloqotda yangi muammolarni keltirib chiqarmoqda. Ota-onalar farzandlarining ijtimoiy tarmoqlardagi faoliyatini nazorat qilishga urinishi yoki ularning ochiq kontent joylashtirishini qabul qila olmasligi mumkin. Bu holat yoshlar va ota-onalar o‘rtasida psixologik masofa paydo bo‘lishiga olib keladi. Shu bilan birga, ijtimoiy tarmoqlar oila a’zolarini birlashtiruvchi vosita sifatida ham xizmat qilishi mumkin. Masalan, chet elda yashovchi oila a’zolari video qo‘ng‘iroqlar va ijtimoiy tarmoqlar orqali aloqada bo‘lib, oilaviy rishtalarni mustahkamlaydi.

6. Psixologik jihatdan ta’sirning tahlili

6.1. Oiladagi stress va emotsional barqarorlik

Milliy qadriyatlarning transformatsiyasi oila a’zolarining psixologik holatiga sezilarli ta’sir qilmoqda. An’anaviy va zamonaviy qadriyatlar o‘rtasidagi ziddiyatlar oilada emotsional barqarorlikni buzishi mumkin. Masalan, ota-onalar farzandlarining an’anaviy qadriyatlar (masalan, erta nikoh yoki oilaviy majburiyatlar)dan voz kechishini qabul qilishda qiynalishi mumkin. Bu esa oilada doimiy bahs-munozaralarga olib keladi. Yoshlar esa o‘z shaxsiy erkinliklarini himoya qilishga urinayotganda ota-onalarning bosimi ostida stressni boshdan kechiradi. Psixologik jihatdan bu holat oila a’zolarining o‘zaro ishonch va mehr-oqibatiga putur yetkazadi.

6.2. Shaxsiy identifikatsiya va madaniy o‘zlik

Milliy qadriyatlarning zaiflashishi yosh avlodning shaxsiy identifikatsiyasiga ham ta’sir qilmoqda. Global madaniyat ta’sirida yoshlar o‘zlarini ko‘proq “dunyo fuqarosi” sifatida his qilishi mumkin, bu esa o‘zbek milliy o‘zligidan uzoqlashishga olib keladi. Masalan, an’anaviy o‘zbek oilasida mehr-oqibat, qarindoshlar bilan yaqin aloqa va jamoatchilik muhim bo‘lsa, zamonaviy yoshlar individual maqsadlarni ustuvor qilib qo‘yishi mumkin. Bu jarayon psixologik jihatdan yoshlarda ichki ziddiyatlarni keltirib chiqaradi: ular o‘z ildizlariga sodiq qolish va zamonaviy dunyoga moslashish o‘rtasida tanlov qilishga majbur bo‘ladi.

6.3. Oilaviy munosabatlarda moslashuvchanlik

Transformatsiya jarayoni oilaviy munosabatlarda moslashuvchanlikni talab qilmoqda. Masalan, ota-onalar farzandlarining mustaqil qarorlarini qabul qilishga o‘rganishi, yoshlar esa oilaviy qadriyatlarning muhimligini anglashi kerak. Bu moslashuvchanlik oiladagi psixologik muvozanatni saqlashga yordam beradi. Masalan, ba’zi zamonaviy o‘zbek oilalarida ota-onalar farzandlarining kasbiy tanlovini qo‘llab-quvvatlaydi, lekin oilaviy an’analarni (masalan, bayramlarni birgalikda nishonlash) saqlab qolishga harakat qiladi. Bu oiladagi ijtimoiy psixologik munosabatlarni mustahkamlashga xizmat qiladi.

Xulosa

O‘zbek oilalaridagi milliy qadriyatlarning transformatsiyalashuvi ijtimoiy psixologik munosabatlarga ham ijobiy, ham salbiy ta’sir ko‘rsatmoqda. Globalizatsiya, urbanizatsiya va axborot texnologiyalari oilaviy tuzum, gender rollari va yoshlar-ota-onalar munosabatlarini o‘zgartirdi. Ushbu o‘zgarishlar shaxsiy erkinlik va tenglik kabi ijobiy natijalarni keltirsa-da, oilaviy aloqalarning zaiflashishi va psixologik stress kabi salbiy oqibatlarni ham keltirib chiqarmoqda. Kelajakda milliy qadriyatlar va zamonaviy tendentsiyalarni muvozanatlash orqali o‘zbek oilalarida sog‘lom ijtimoiy psixologik muhitni shakllantirish mumkin. Bu jarayonda ta’lim, psixologik yordam va ijtimoiy tarmoqlar muhim rol o‘ynaydi.

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5. Amaliy qism

5.1. Tadqiqot metodologiyasi

Ushbu maqolada milliy qadriyatlar transformatsiyasining o‘zbek oilalaridagi ijtimoiy psixologik munosabatlarga ta’sirini o‘rganish uchun sifatli va miqdoriy tadqiqot usullari qo‘llanildi. Tadqiqot ikki asosiy bosqichda amalga oshirildi:

1. **So‘rovnoma**: Farg‘ona shahri va Namangan viloyatidagi 100 ta oila (50 tasi shahar, 50 tasi qishloq oilalari) ishtirokchilari orasida so‘rovnoma o‘tkazildi. So‘rovnoma oiladagi ijtimoiy-psixologik munosabatlar, milliy qadriyatlarning o‘rni va global ta’sirlarning ta’siri haqida 20 ta savoldan iborat edi. Ishtirokchilarning yoshi 18 dan 60 gacha bo‘lib, 60% ayollar va 40% erkaklar edi.
2. **Yarim tuzilgan intervyu**: 20 nafar respondent (10 nafar shahar va 10 nafar qishloq oilalaridan) bilan chuqur intervyular o‘tkazildi. Intervyular oiladagi ziddiyatlar, gender rollari va yoshlar, ota-onalar munosabatlari kabi mavzularni qamrab oldi.

Tadqiqot maqsadi – milliy qadriyatlarning transformatsiyasi natijasida oilaviy munosabatlardagi psixologik o‘zgarishlarni aniqlash hamda shahar va qishloq oilalari o‘rtasidagi farqlarni tahlil qilish edi.

5.2. Tadqiqot natijalari

5.2.1. So‘rovnoma natijalari

So‘rovnoma natijalariga ko‘ra, respondentlarning 78% milliy qadriyatlar (mehr-oqibat, jamoatchilik, ota-onaga hurmat) hali ham oilaviy munosabatlarda muhim ahamiyatga ega deb hisoblaydi. Biroq, shahar oilalarining 65% global ta’sirlar (masalan, shaxsiy erkinlik va individualizm) oilaviy qarorlarda tobora muhim rol o‘ynayotganini ta’kidladi. Qishloq oilalarida esa bu ko‘rsatkich atigi 32% ni tashkil etdi, bu esa an’anaviy qadriyatlarning qishloq joylarda ko‘proq saqlanib qolganligini ko‘rsatadi.

So‘rovnoma natijalarida quyidagi asosiy tendentsiyalar aniqlandi:

- **Gender rollari**: Shahar oilalarining 55% ayollarning professional faolligi oiladagi tenglikni oshirgan deb hisoblasa, qishloq oilalarining faqat 25% bu fikrga qo‘shildi.
- **Yoshlar va ota-onalar munosabatlari**: Respondentlarning 62% yoshlarning mustaqil qaror qabul qilish istagi oilada ziddiyatlarga olib kelishini ta’kidladi. Bu ko‘rsatkich shahar oilalarida (70%) qishloq oilalariga (54%) nisbatan yuqori edi.
- **Ijtimoiy tarmoqlar**: Respondentlarning 80% ijtimoiy tarmoqlar oila a’zolari o‘rtasidagi muloqotga ham ijobiy, ham salbiy ta’sir ko‘rsatishini bildirdi. Masalan, ijtimoiy tarmoqlar uzoq masofadagi qarindoshlar bilan aloqani mustahkamlashga yordam bersa-da, yoshlarning “virtual dunyoda ko‘proq vaqt o‘tkazishi” ota-onalar tomonidan tashvish sifatida qayd etildi.

5.2.2. Intervyu natijalari

Intervyular milliy qadriyatlarning transformatsiyasi oilaviy munosabatlarda qanday aks etishini chuqurroq tushunishga yordam berdi. Quyida asosiy topilmalar keltiriladi:

- **Shahar oilalari**: Shaharda yashovchi respondentlar (masalan, 28 yoshli IT mutaxassisi) mustaqil hayot tarzini afzal ko‘rishini va ota-onalarning an’anaviy talablariga (masalan, erta nikoh) qarshilik bildirishini ta’kidladi. Bu esa oilada psixologik masofa paydo bo‘lishiga olib keladi. Shu bilan birga, ba’zi

respondentlar (45 yoshli o‘qituvchi ayol) oilaviy an’analarni saqlab qolish uchun yoshlar bilan ochiq muloqot qilish muhimligini aytishdi.

- **Qishloq oilalari**: Qishloq respondentlari (masalan, 50 yoshli fermer) an’anaviy qadriyatlarning (jamoatchilik, katta yoshdagilarga hurmat) hali ham oilaviy munosabatlarda o‘rin tutishini ta’kidladi. Biroq, yosh avlodning ijtimoiy tarmoqlardan foydalanishi va shaharga ko‘chib ketish istagi oilaviy birlikka putur yetkazayotgani haqida tashvish bildirdi.

Intervyular shuni ko‘rsatdiki, shahar oilalarida shaxsiy erkinlik va mustaqillik muhimroq bo‘lsa, qishloq oilalarida jamoatchilik va oilaviy mas’uliyat ustuvor bo‘lib qolmoqda. Bu farqlar oiladagi psixologik munosabatlarda turlicha dinamikani keltirib chiqaradi.

5.3. Natijalarni tahlil qilish

Tadqiqot natijalari milliy qadriyatlarning transformatsiyasi o‘zbek oilalarida ijtimoiy psixologik munosabatlarga turlicha ta’sir qilishini tasdiqladi. Shahar oilalarida global ta’sirlar natijasida individualizm va gender tengligi kabi yangi qadriyatlar kuchaymoqda, bu esa an’anaviy ierarxik tuzumni yumshatmoqda. Qishloq oilalarida esa milliy qadriyatlarning saqlanib qolishi oilaviy birlikni mustahkamlashga yordam beradi, lekin yoshlarning zamonaviy dunyoga intilishi ziddiyatlarni keltirib chiqaradi.

Ijtimoiy tarmoqlarning ta’siri ikki tomonlama: ular oila a’zolarini birlashtirsa-da, yoshlarning virtual dunyoda ko‘proq vaqt o‘tkazishi oilaviy muloqot sifatini pasaytiradi. Gender rollaridagi o‘zgarishlar, ayniqsa shahar oilalarida, ayollarning ijtimoiy faolligini oshirgan bo‘lsa-da, bu jarayon ba’zi hollarda oiladagi an’anaviy mas’uliyat taqsimotidagi ziddiyatlarni keltirib chiqarmoqda.

5.4. Amaliy takliflar

Tadqiqot natijalariga asoslanib, quyidagi amaliy takliflar beriladi:

1. **Oilaviy psixologik maslahat xizmatlarini rivojlantirish**: Shahar va qishloq joylarda psixologik maslahat markazlari tashkil etilib, oiladagi ziddiyatlarni hal qilishda yordam berilishi lozim.
2. **Madaniy ta’lim dasturlari**: Maktablar va mahallalarda milliy qadriyatlar va an’analarni targ‘ib qiluvchi dasturlar orqali yosh avlodning o‘z ildizlariga bog‘liqligi mustahkamlanadi.
3. **Ijtimoiy tarmoqlardan foydalanish**: Oilaviy munosabatlarni mustahkamlovchi ijtimoiy tarmoq kampaniyalari tashkil etilib, yoshlar va ota-onalar o‘rtasidagi muloqotni yaxshilashga xizmat qilishi mumkin.
4. **Mahalla tizimini modernizatsiya qilish**: Mahallalarda oilaviy tadbirlar va yoshlar uchun zamonaviy platformalar tashkil etilib, an’anaviy va zamonaviy qadriyatlar muvozanatiga erishiladi.

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ANDIJON VILOYATIDA ETNOGRAFIK TURIZMNI RIVOJLANTIRISH IMKONIYATLARI

Annotatsiya*: Ushbu maqolada Andijon viloyatining milliy tarkibi, mavjud etnoturizm maskanlari, o‘zbek va qirg‘iz xalq o‘yinlari asosida etnografik turizmni rivojlantirish imkoniyatlari tahlil qilinadi.*

Kalit so’zlar: *etnografik turizm, Andijon, o‘zbek xalq o‘yinlari, qirg‘iz madaniyati, turizm maskanlari*

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OPPORTUNITIES FOR THE DEVELOPMENT OF ETHNOGRAPHIC TOURISM IN ANDIJAN REGION

Abstract: *This article analyzes the ethnic composition of Andijan Region, the current sites of ethnographic tourism, and the potential for development based on Uzbek and Kyrgyz traditional games.*

Keywords: *ethnographic tourism, Andijan, Uzbek games, Kyrgyz culture, tourist sites*

Andijon viloyati O‘zbekistonning sharqiy qismida joylashgan bo‘lib, o‘zining boy madaniy merosi, an’anaviy turmush tarzi va xalq hunarmandchiligi bilan mashhur. Etnografik turizm, ya’ni mahalliy xalqlarning urf-odatlari, an’analari, milliy taomlari va turmush tarzini o‘rganishga qaratilgan turizm turi, Andijon viloyatida katta salohiyatga ega. Viloyatning turli xil etnik guruhlari, ayniqsa o‘zbek va qirg‘iz xalqlarining madaniy xilma-xilligi sayyohlarni jalb qilish uchun muhim omil hisoblanadi [2],[3]. Ushbu maqolada Andijon viloyatida etnografik turizmni rivojlantirish imkoniyatlari tahlil qilinadi va ushbu sohada mavjud salohiyatni baholash uchun jadval shaklida ma’lumot taqdim etiladi.

Andijon viloyatidagi etnografik turizm maskanlari

Hozirgi kunda Andijon viloyatida etnografik turizmni rivojlantirish uchun ikkita asosiy maskan ro‘yxatga olingan:

1. **“Yunusali ota” milliy o‘zbek xonadoni** (Marhamat tumani): Bu maskan o‘zbek xalqining an’anaviy turmush tarzini namoyish etadi. Milliy dor o‘yinlari, o‘zbek xonadonining ichki bezagi va an’anaviy taomlari sayyohlarga taqdim etiladi. Maskan 0.20 gektar maydonga ega bo‘lib,

2. **“Oltin orda” qirg‘iz uyi** (Xonobod shahri): Qirg‘iz xalqining milliy o‘tovlari, ot o‘yinlari va an’anaviy taomlari bilan tanishtiruvchi maskan. 0.10 gektar maydonga ega bo‘lib, Abjanilova Erkinoy tomonidan boshqariladi.

Ushbu maskanlar viloyatning etnografik turizm salohiyatini ko‘rsatadi, ammo bu sohada rivojlanish uchun katta imkoniyatlar mavjud.

Etnografik turizmning ahamiyati

Etnografik turizm Andijon viloyatida quyidagi afzalliklarni taqdim etadi:

- **Madaniy merosni saqlash**: Mahalliy an’analar, hunarmandchilik va turmush tarzi sayyohlar orqali keng targ‘ib qilinadi va kelajak avlodlar uchun saqlanadi.
- **Iqtisodiy foyda**: Etnografik maskanlar mahalliy aholi uchun ish o‘rinlari yaratadi, shuningdek, turizm infratuzilmasi (mehmonxonalar, restoranlar, transport) rivojlanishiga hissa qo‘shadi.
- **Xalqaro hamkorlik**: Turli xil etnik guruhlarning madaniyati xorijiy sayyohlarni jalb qiladi, bu esa xalqaro madaniy almashinuvni rivojlantiradi.
- **Ta’lim va targ‘ibot**: Sayyohlar mahalliy xalqlarning hayoti, urf-odatlari va tarixi haqida ko‘proq ma’lumotga ega bo‘ladi.

2. Etnografik turizm maskanlari va ularning imkoniyatlari

Mavjud ikki maskan – “Yunusali ota” xoni va “Oltin Orda” qirg‘iz uyi – namunaviy obyekt sifatida xizmat qilmoqda.

Tuman	Taklif etiladigan etno-loyihalar	Etnik asos	O‘yinlar
Baliqchi	“To‘maris bog‘i” – ayollar hunari	O‘zbek	Qo‘shiq va raqs
Jalaquduq	“Yurtlar orasi” – qirg‘iz ot o‘yinlari	Qirg‘iz	Ulak, jorǵa
Ulug‘nor	“Paxta to‘ylari” – dehqonlik urf-odati	O‘zbek	Xalq o‘yinlari
Shahrixon	“Zar craft” – zardo‘zlik hunari	Aralash	Mahorat darslari

O‘zbek va qirg‘iz xalq o‘yinlarini turizmga joriy etish imkoniyatlari

- **O‘zbek xalq o‘yinlari:** chalqayroq, halima, arqon tortish – bolalar va oila turizmi uchun jozibador.
- **Qirg‘iz xalq o‘yinlari:** “kok boru” (ulak), “jorǵa” (ot yugurti) – sport va ekstremal turizm shaklida tashkil etilishi mumkin.

Etnoturizmni rivojlantirishdagi muammolar va yechimlar

- **Muammo:** Etnografik maskanlar soni cheklangan. **Yechim:** Har bir tumanda kamida 1 ta milliy madaniyat maskani tashkil etish.
- **Muammo:** Turizm infratuzilmasi yetarli emas. **Yechim:** YTT (yirik turistik to‘plam) loyihalari orqali mahalliy xonadonlarni tayyorlash.

- **Muammo:** Reklama va tashviqot sust.

Yechim: Etnoturizm maskanlarini Google Maps va TripAdvisor kabi global platformalarga integratsiya qilish.

Xulosa

Andijon viloyati o‘zining boy etnik va madaniy tarkibi bilan O‘zbekiston miqyosida etnografik turizmni rivojlantirishda yetakchi bo‘lishi mumkin. Viloyatda mavjud bo‘lgan milliy maskanlar sonini ko‘paytirish, turizmga oid infratuzilmani rivojlantirish va mahalliy xalq o‘yinlarini turistik mahsulotga aylantirish orqali bu salohiyat to‘liq ro‘yobga chiqarilishi mumkin. Aniqlangan yangi maskanlar kelgusida xalqaro sayyohlarni jalb etuvchi yirik loyihalarga aylanishi mumkin.

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THE USE OF REGIONAL ANESTHESIA TECHNIQUES IN DIFFERENT SURGICAL PROCEDURES

Anaesthesia with bupivacaine provides more stable hemodynamic parameters than with lidocaine. Interest in the use of regional anaesthesia methods in surgical and traumatological operations has always been quite high. The aim of the study was to investigate the effectiveness of regional methods in surgical operations on the lower abdomen and traumatological and vascular operations on the lower extremities. Materials and methods of research. The data of the study are based on the results of the Department of Anaesthesiology and Reanimatology of the RSCEMP AF in Andijan. The data of surgical treatment with modern local anaesthetics Bupivacaine and Ropivicaine in 198 adult patients in 2023-2024, operated in planned and emergency procedure for surgical, traumatological and vascular diseases were used in the study. The mean age of the patients was 40.5±14.0 years, the mean weight of the patients was 72.9±10.7 kg, and the mean height of the patients was 169.2±7.4 cm.

Results: *Bupivacaine-based anaesthesia has shown to be the method with the least effect on haemodynamics. With proper calculation of anaesthetic dose, haemodynamic shifts were minimal. There was enough time to perform these surgical interventions under spinal anaesthesia with bupivacaine at a dose of 15 mg. From the complications of spinal anaesthesia we noted headaches in 4 patients, and getting into nerve roots in 2 patients. The positive moment of epidural anaesthesia was the possibility of prolonged anaesthesia and the possibility of effective analgesia in the postoperative period. From the complications of EA we noted partial block and mosaicism of anaesthesia in 3 cases in group 1. Conclusion: Epidural anaesthesia is preferable when it is necessary to prolong the time of anaesthesia and postoperative analgesia.*

Keywords: *regional anaesthesia, sympatho-adrenal system, hypothalamic-pituitary-adrenocortical system, bupivacaine, ropivicaine.*

Epidural and spinal anaesthesia using the modern anaesthetic bupivacaine has shown to be effective and safe in operations on the lower abdomen and lower extremities. Anaesthesia with bupivacaine provides more stable hemodynamic parameters than with lidocaine. Interest in the use of regional anaesthesia methods in surgical and traumatological operations has always been quite high. All methods of general and regional anaesthesia have their advantages and disadvantages. Methods of regional anaesthesia options, their advantages, disadvantages, complications and effects on the body are well described in the literature (1,2,3). Various authors give preference to epidural anaesthesia (EA), spinal anaesthesia

(SA), combined spinal-epidural anaesthesia (CSEA) alone or in combination with general anaesthesia (GA) under artificial ventilation (AV) conditions (4,5,6). The advantages of regional anaesthesia methods in comparison with OA are complete blockade of pain impulsation from the anaesthesia zone, reduction of total peripheral resistance (TPR), and most importantly, the possibility of preserving consciousness and independent breathing, which avoids complications associated with OA and ventilator (7). Compared to EA, SA is characterised by clear identification of the subarachnoid space by the presence of liquor, a smaller amount of local anaesthetic, and rapid onset of effect. EA is characterised by its ability to be performed at any level, while SA is only performed in the lumbar region. Prolonged EA has become an important component of postoperative anaesthesia and intensive care. With the advent of the epidural catheterisation technique and the possibility of additional anaesthetic administration, EA has become more popular, due to the fact that SA is limited by the time of local anaesthetic action (8,9,11). This problem is solved by the combined use of SA and EA, first as a two-level technique, and then by the development of combined spinal-epidural anaesthesia (CSEA), 'needle through needle', with puncture at the same level. CSEA combines a rapid onset of effect, as with SA, and the possibility of prolonged maintenance of anaesthesia, as with EA (4,10).

Materials and methods of research. The data of the study are based on the results of the work of the Department of Anaesthesiology and Reanimatology of the RSCEMP AF in Andijan. Regional methods of anaesthesia have been introduced since 1985. Before 1999-2005 regional anaesthesia methods were rarely used. The main drug for EA was 2% lidocaine. With the appearance of new disposable kits of B.Braun company for EA and SA, and modern local anaesthetics Bupivacaine and Ropivicaine, there is a steady increase in the percentage of regional anaesthesia in the structure of planned and emergency anaesthesia. Over 1000 regional anaesthetics using new drugs have been performed in the last 3 years. This study used operative treatment data from 198 adult patients in 2023-2024 who underwent elective and emergency surgery for surgical, traumatological and vascular conditions. The mean age of patients was 40.5±14.0 years, mean weight of patients was 72.9±10.7 kg, mean height of patients was 169.2±7.4 cm. The bulk of surgical interventions were performed routinely. The distribution of patients by types of operations is presented in Table 1.

Table 1 Distribution of patients by the structure of surgical interventions and types of anaesthesia

Name of operation	Epidural anaesthesia	Spinal anaesthesia	Scheduled	Emergency
Appendectomy	**28**	**20**	**-**	**48**
Herniotomy, inguromastoid hernia repair	**33**	**13**	**25**	**21**
Haemorrhoidectomy	**9**	**9**	**18**	**-**

Excision of rectal fistula, sphincteroplasty	**3**	**8**	**11**	**-**
Anal fissure excision	**-**	**5**	**5**	**-**
Transvesical adenomectomy	**11**	**2**	**13**	**-**
Transurethral resection of the prostate	**16**	**9**	**25**	**-**
Open femoral osteosynthesis	**9**	**-**	**9**	**-**
Radical phlebectomy	**6**	**17**	**23**	**-**
Total	**115**	**83**	**129**	**69**

In emergency trauma patients, only OA (general anaesthesia) was used, because the state of traumatic shock did not allow regional anaesthesia. In conditions of traumatic shock, EA and SA can cause circulatory decompensation and a state of uncontrolled hypotension. In emergency surgical patients with pinched inguinal hernia, acute appendicitis, proctological diseases in the absence of peritonitis, EA or SA was performed. All patients underwent a standard preoperative examination including general blood and urine analysis, biochemical blood analysis, coagulogram, electrocardiogram, chest X-ray, consultations of allied specialists. The allergological anamnesis was determined. The degree of anaesthetic risk was assessed using the American Anaesthesiologists Association (ASA) scale. The average risk degree was 1.5±0.8 points, indicating that relatively healthy people with non-serious comorbidities were included in the study. Patients were divided into 3 groups according to anaesthesia technique: 1. Lidocaine based epidural anaesthesia (n=35); 2. Bupivacaine based epidural anaesthesia (n=70); 3. Bupivacaine based spinal anaesthesia (n=73). For EA we used the kits of 'W.Braun' (Germany) and Balton (Poland). Puncture of the epidural space was performed under local anaesthesia with 0.25% novocaine at the level of L1 -L2 , L2 -L3 using an 18G needle in the patient lying on the side. Catheterisation of the epidural space was performed, directing the catheter upwards or downwards depending on the type of surgical intervention. Then a test dose of lidocaine 80 mg (MERRYMED FARM, Uzbekistan) or bupivocaine 15 mg (Grindex, Latvia) was administered. The patient was observed for 5 minutes. If there were no signs of spinal block, a basic dose of bupivacaine 75-100 mg combined with fentanyl 0.1 mg or lidocaine 240-400 mg was administered. If spinal block developed, surgery was started and anaesthesia was administered as CA. The catheter was removed at the end of the operation and used for additional injection of half of the spinal dose of anaesthetic. Anaesthesia was started after registration of initial indicators of central hemodynamics and preliminary infusion of NaCI 0.9% solution or colloidal solutions at the rate of 10-15 ml/kg. In case of arterial pressure decrease due to vasoplegic effect of EA, mesaton in dilution was administered intravenously bolus against the background

of continued infusion load. Subsequent doses of bupivacaine, half of the initial one, were administered epidurally after 120-180 min. Additional doses of lidocaine were administered every 40-50 min, also at half the initial dose. Humidified air-oxygen mixture was insufflated throughout the operation. If drug sedation was necessary, in some patients, to eliminate the effect of 'presence at surgery', brusepam was administered intravenously at a dose of 0.05-0.1 mg/kg-1 every 30-60 min. The epidural catheter was left for postoperative anaesthesia and removed on the next day after surgery. Special needles of the company 'V.Braun', Germany, were used for SA. In all patients, puncture of the subarachnoid space was performed under local anaesthesia of the skin and subcutaneous tissue with 0.25% novocaine along the midline of the spinal column. The spinal canal was punctured at the level of L3 -L4 . Spinal anaesthesia was performed with bupivacaine solution in a dose of 15-20 mg. A single injection of bupivacaine was sufficient for 2-3 hours of effective anaesthesia. Lidocaine was not used for CA due to its short duration of action. The study was conducted at the following stages of surgery and anaesthesia: - Initial data; - Start of surgery; - Main (traumatic) stage of surgery; - End of surgery. Hemodynamic parameters were recorded: systolic blood pressure (SBP), diastolic blood pressure (DBP), heart rate (HR), infusion volume, and the need for analgesics in the postoperative period. Statistical processing was performed using Microsoft Excel programme. Reliability of differences was determined by Student's t-criterion. The difference was considered reliable at $p<0,05$.

Results and their discussion. The results of the work are reflected in Table 2. Initial hemodynamic parameters in the groups did not differ significantly and were at the upper limit of the norm. At the second stage, after the beginning of EA or SA action, there was a significant decrease in SBP, MAP and HR, which is associated with the pharmacological effect of EA and SA. The decrease occurred within physiologically acceptable values. At the traumatic stage, SystAD increased significantly in groups 1 and 2, and this trend continued at stage 4. By the end of the operation, SystAD and MAP significantly increased compared to stages 2 and 3, but remained below baseline. HR in group 2 at stages 2 and 3 were similar, with a slight increase at stage 4. At stages 3 and 4, HR was similar in group 1. In group 3, HR gradually increased in stages 2, 3, and 4. In the overall trend, the haemodynamic changes were homogeneous and consistent with the clinic of EA and SA. In the comparison between groups, it should be noted that in SA, the decrease in SystAD and HR was less pronounced than in EA in groups 1 and 2. This is due to the lower dose of anaesthetic in SA, and the absence of a general effect on the body. The most pronounced bradycardia was observed in the group using lidocaine for EA. In case of severe bradycardia, it was necessary to administer atropine 0.1% 0.5 ml each. In rare cases, when bradycardia and hypotension were combined, adrenaline 0.1% 0.1 - 0.2 ml in dilution was administered. When analysing hemodynamics in all groups, it should be noted that both EA and SA proved to be effective and safe methods of anaesthesia. In order to prevent vascular collapse before the test dose administration, a preliminary infusion of NaCl 0.9% in the volume of at least 800 ml was performed, followed by infusion of at least 1600

ml of fluids during the operation under hemodynamic control. It should be noted that volumetric correction of hemodynamics did not always allow to stabilise SystAD, which is associated with sympathetic blockade and resorptive effect of local anaesthetics. SA based on bupivacaine proved to be the method with the least influence on haemodynamics. With correct calculation of the anaesthetic dose, haemodynamic shifts were minimal. However, CA has one significant disadvantage associated with the limited time of anaesthetic action. There was enough time to perform these surgical interventions under spinal anaesthesia with bupivacaine in a dose of 15 mg. Among the complications of SA we noted headaches in 4 patients, and penetration into nerve roots in 2 patients. The positive aspect of EA was the possibility of prolonged anaesthesia and the possibility to perform effective analgesia in the postoperative period. Partial block and mosaicism of anaesthesia in 3 cases in group 1 were noted as complications of EA. When bupivacaine was used, anaesthesia was always effective.

Table 2 Dynamics of the main indicators at the stages of the study

Indicator	Groups	1 stage	2 stage	3 stage	4 stage
Systolic blood pressure (mmHg)	1 group	135±19	84±14*	91±14* **	100+15* ** ***
	2 group	138±20	86+13*×	94±14* **	101±12* ** ***
	3 group	139±18	99±11 ×× ×××	93±22*	107±15* ** *** ×× ×××
Diastolic blood pressure (mm.Hg)	1 group	77±10	45±8*	44±8*	49±8* ***
	2 group	75±15	45±6*	51±7* ** ×	53±6* **
	3 group	75±8	45±8*	44±5* ××	53±6* ** *** ×××
Heart rate (beats/min)	1 group	84±14	63±8*	75±9* **	75±9* **
	2 group	86±14	71±9* ×	70±12*	79±8* ** *** ×
	group	85±12	67±10* ××	75±9* **	79±9* ** *** ××

* - p<0.05 in comparison with stage 1
** - p<0.05 in comparison with stage 2
*** - p<0.05 compared to stage 3
× - p<0.05-significance of differences between group 1 and 2
×× - p<0.05 significance of differences between group 2 and 3
××× - p<0.05 significance of differences between group 1 and 3

The majority of patients were transferred from the operating theatre immediately to specialised departments. There are many works devoted to the

comparative evaluation of regional anaesthesia in different types of surgical interventions (11, 12, 13, 14). This paper presents our experience in a multidisciplinary hospital, where various types of surgical interventions are performed. The widespread introduction of EA and SA into daily anaesthesia practice allows to reduce the load on the intensive care unit and the waking room, to provide comfortable conditions for the surgeon and the patient.

Conclusions: Epidural anaesthesia based on bupivacaine provides effective and safe anaesthesia for lower abdominal and lower extremity surgeries. Spinal anaesthesia based on bupivacaine provides more stable haemodynamics than epidural anaesthesia. Epidural anaesthesia is preferable when prolongation of anaesthesia time and postoperative pain relief are required.

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THE ROLE OF ENGLISH AS A GLOBAL LANGUAGE IN MODERN COMMUNICATION

Abstract:*This paper explores the role of English as a global language in the context of modern communication. It examines how English functions as a medium in international business, diplomacy, academia, and digital platforms. The widespread use of English has fostered global connectivity and knowledge sharing but also poses challenges such as linguistic inequality and cultural homogenization. The article emphasizes the need to balance the advantages of English with efforts to preserve linguistic diversity and promote multilingual education.*

Keywords:*English as a global language, modern communication, international business, digital media, linguistic inequality, multilingualism, education, language dominance*

Introduction

In the 21st century, English has solidified its status as the global lingua franca. Spoken by over 1.5 billion people around the world, English functions as a bridge across cultures, economies, and academic disciplines. As globalization continues to accelerate, the role of English in modern communication becomes more prominent and essential. This paper discusses the importance of English as a global language, its impact on various fields, and the challenges and implications of its dominance.

English in Global Communication

English plays a central role in international communication. It is the primary language used in diplomacy, international business, science, technology, and the internet. Multinational companies conduct meetings and publish documents in English; global organizations such as the United Nations, the European Union, and the World Trade Organization rely on English for official communications.

The dominance of English is also evident in digital communication. Most online content is produced in English, and platforms like Google, YouTube, and Wikipedia prioritize English language resources. Furthermore, the rise of social media has made English a common medium for cross-cultural interaction, allowing users from different linguistic backgrounds to exchange ideas instantly.

English in Education and Academia

English has become the dominant language of academia. Leading universities across the globe use English as the medium of instruction. Academic publications, journals, and conferences primarily operate in English, making it essential for scholars and researchers to have proficiency in the language. This dominance has led to greater collaboration and knowledge sharing but has also raised concerns about linguistic inequality and the marginalization of other languages.

Additionally, many non-English-speaking countries have integrated English into their education systems from an early age. English proficiency is seen as a gateway to better job opportunities and access to global information, contributing to its widespread adoption.

Challenges of English Language Dominance

While the global role of English brings many advantages, it also presents challenges. Linguistic imperialism is a concern, as the dominance of English can lead to the erosion of native languages and cultures. There is a growing need to promote multilingualism and protect linguistic diversity while recognizing the practical benefits of English.

Moreover, the emphasis on English proficiency may create social and educational inequalities, especially in regions with limited access to quality English education. Learners may face difficulties achieving fluency, and their academic or professional potential may be limited by language barriers.

Conclusion

English has undoubtedly become the global language of modern communication. Its widespread use facilitates international dialogue, scientific advancement, and global business. However, it is important to address the cultural and linguistic implications of its dominance. The future of global communication should encourage multilingualism, inclusivity, and the preservation of linguistic diversity while leveraging English as a tool for global understanding.

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SOIL EROSION: CAUSES, TYPES, CONSEQUENCES, PREVENTION METHODS

Annotation. *The definition of soil erosion implies the destruction of the surface layer of the earth due to the effects of precipitation and wind. According to calculations, over the past two centuries, erosion has destroyed nearly 2 billion hectares of arable land.*

Key words: *soil, fertility, measure, erosion, concentration, fertilizer, microorganism, humus, element.*

Due to erosion and failure to take measures to prevent it, its development and spread, enormous damage is being caused to the country's economy. Potential soil fertility decreases, chemical and agrophysical properties deteriorate, and biological activity decreases. As a result, the yield decreases and the quality of agricultural products deteriorates. The effectiveness of chemicalization also decreases.

Erosion processes are present in virtually every region. According to forecasts, due to the lack of soil protection measures, annual losses due to erosion can reach 7 billion tons of soil. Soil erosion leads to the weathering of humus and disruption of the ecological balance, which can lead to an ecological disaster in the future. During dust storms, the loss of the humus layer reaches 10 centimeters. It should be emphasized that a centimeter of this layer is created in nature more often than in 100 years. The lands intensively used in agriculture in Uzbekistan are mainly irrigated lands, equal to 4.28 million hectares. These lands are truly the golden fund of our republic and more than 95% of the gross agricultural output is grown on them. In this regard, an important task of agricultural specialists is to maintain and systematically increase soil fertility. It is not for nothing that the state allocates large sums of money for improving land reclamation, restoring soil fertility, building reclamation systems, and conducting rituals related to their use. Unfortunately, today the soil layer is being eroded, good fertile lands are becoming less and less, and they are quickly becoming unusable. Throughout history, humanity has lost about a billion hectares of land (cities, settlements, buildings, roads, erosion, salt water, evaporation, etc.). The problem of soil protection from erosion is an urgent

problem for many countries located in the arid climatic region of the world, including the territory of Uzbekistan. Since the eroded areas of land in the republic are 2 million square meters. about a hectare or more than 40% of the total arable land. According to our data, on the territory of Uzbekistan there are more than 3 million hectares of drylands suitable for use, of which about 1 million hectares are lowmaintenance and semi-maintained drylands, and more than 70% of these drylands are subject to surface impact. water erosion. A classification of eroded soils of Uzbekistan has been developed and a map of erosionhazardous lands of the republic has been compiled. Under the influence of the erosion process, weakly eroded, medium eroded, strongly eroded soils and sediments are formed, that is, washed away soils, which are the thickness of the soil layer, humus, the supply and composition of nutrients (micro and macro elements), the number of microorganisms and quality, chemical and physical properties, bioenergetic indicators indicate different levels of productivity. It is known that as a result of soil erosion due to irrigation erosion on slopes with a slope of more than 50, up to 100-150 tons per hectare or more, or even up to 500 tons of soil, can be washed away. Together with this soil, 500-800 kg of humus, 100-120 kg of nitrogen, 75-100 kg of phosphorus and even more nutrients can be lost per hectare per year. It should be noted that erosion processes have a negative impact on the soil ecosystem, negatively affecting the amount of solar energy used in biomass and reducing it. As a result of erosion processes, 30-50 percent or more of solar energy is lost, absorbed by phytomass, humus and soil microorganisms, while the intensity of biological and soil processes occurring in the soil is mainly associated with solar energy reserves and changes in the appearance of scattered light can be imagined. the scale of damage caused by erosion to the ecosystem. In our country, every year the prevention and control of soil erosion, increasing the productivity of soils eroded by water and wind is recognized as an event of national importance.To protect the soil from erosion, it is necessary to carry out agro-complex measures:

To prevent the compaction of the subsoil layer of irrigated soils, it is necessary to widely introduce the technology of sowing and minimum tillage. Experience has shown that soil density per cubic centimeter during the growing season is 1.20-1.35 g/cm^3 and is maintained in an optimal state. The correct and rational use of any means of production largely depends on how deeply and comprehensively its important features are studied. As a result of active human impact on the soil, changes in its properties, increase or decrease in productivity, salinization, erosion, dehumification, rational use of rainfed lands in agriculture and their protection require more attention than before. It is necessary to use the land wisely, increase the fertility of the soil, know its quality, economic value and protection, plant various plants on a scientific basis according to the state of the soil, apply environmentally "clean" methods of tillage., and carry out fertilization at a high level. Increasing the productivity and productive capacity of the soil should largelydepend on the careful and economical handling of it, a complex aimed at improving it. Currently, the problem of soil pollution with heavy metals in technogenic and agricultural industries is acute. Heavy metals occupy one of the

leading places among environmental pollutants. Many representatives of this group of substances, such as lead, copper, zinc, cadmium, even in very small quantities, can cause immunological, oncological and other types of diseases. Heavy metals far outperform common pollutants such as carbon dioxide and sulfur and are second only to pesticides in terms of pollution. In the future, they may turn out to be more dangerous than NPP and MSW emissions. Soil contamination with heavy metals is associated with their widespread use in industrial production. Due to the imperfection of purification systems, heavy metals enter the environment, including the soil, polluting and poisoning it. Soil is the main environment in which heavy metals accumulate. Heavy metals enter the soil both with atmospheric air and with water. It is a secondary source of pollution of the upper atmosphere of the oceans. The mineralization of water was determined by the gravimetric method. The determination method is based on the gravimetric determination of dissolved substances, which is determined by filtering the sample to a constant weight,evaporating the residue and drying at 150°C for weakly mineral waters (105-110°C) and highly mineralized waters. Ammonium ions were determined photometrically. The main method for determining ammonium nitrogen is the calorimetric method using Nessler's reagent.

Analysis of soil pollution with heavy metals in the region shows that the content of chromium, manganese, cobalt, nickel, copper, silver, zinc and other elements slightly exceeds the maximum allowable concentrations for soils. The concentration of all other heavy metals does not exceed the MPC, which confirms the conclusions made in the review part of the work about the low information content of heavy metals in environmental monitoring.

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BENEFITS OF USING SELENIUM-CONTAINING DRUGS IN PREGNANT WOMEN TO PREVENT FETOPLACENTAL INSUFFICIENCY

Annotatsiya: *Optimal maternal nutrition is a critical determinant of both placental function and fetal development, directly influencing pregnancy outcomes and the long-term health of offspring. Emerging research emphasizes the role of micronutrients beyond macronutrient intake, with selenium gaining attention due to its antioxidant properties and involvement in modulating oxidative stress within the placenta. Fetoplacental insufficiency, often linked to inadequate nutrient supply and increased oxidative damage, can lead to complications such as fetal growth restriction and pre-eclampsia. Integrating selenium-containing drugs during pregnancy may help mitigate these risks by enhancing placental function and supporting fetal growth. Understanding the complex interplay between maternal micronutrient status, placental metabolism, and fetal health is essential for developing targeted interventions aimed at preventing adverse outcomes associated with compromised placentation (Janna L Morrison et al.)(Shaker el Azzaz S et al.). The conceptual framework illustrating maternal diet's impact on placental oxidative stress and fetal outcomes further reinforces the necessity of targeted micronutrient supplementation in prenatal care.*

Keywords: *selenium deficiency, selenium toxicity, clinical benefits of selenium supplementation in pregnant women.*

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HOMILADOR AYOLLARDA FETOPLASENTAL ETISHMOVCHILIKNING OLDINI OLISH UCHUN SELEN O'Z ICHIGA OLGAN PREPARATLARNI QO'LLASHNING AFZALLIKLARI

Annotatsiya:*Onaning optimal ovqatlanishi platsenta funktsiyasi va homila rivojlanishining muhim omili bo'lib, homiladorlik natijalariga va naslning uzoq muddatli salomatligiga bevosita ta'sir qiladi. Rivojlanayotgan tadqiqotlar mikronutrientlarning makronutrientlarni iste'mol qilishdan tashqari rolini ta'kidlaydi, selen antioksidant xususiyatlari va platsenta ichidagi oksidlovchi stressni modulyatsiya qilishda ishtirok etishi tufayli e'tiborni tortadi. Fetoplasental etishmovchilik, ko'pincha ozuqa moddalarining etarli darajada ta'minlanmaganligi va oksidlovchi shikastlanishning kuchayishi bilan bog'liq bo'lib, homila o'sishini cheklash va preeklampsi kabi asoratlarga olib kelishi mumkin. Homiladorlik davrida selen o'z ichiga olgan dorilarni birlashtirish platsenta funktsiyasini kuchaytirish va homila o'sishini qo'llab-quvvatlash orqali ushbu xavflarni kamaytirishga yordam beradi. Onaning mikronutrient holati, platsenta metabolizmi va homila salomatligi o'rtasidagi murakkab o'zaro bog'liqlikni tushunish buzilgan platsenta bilan bog'liq salbiy oqibatlarning oldini olishga qaratilgan maqsadli tadbirlarni ishlab chiqish uchun juda muhimdir (Janna L Morrison va boshqalar) (Shaker el Azzaz S va boshq.). Ona dietasining platsenta oksidlovchi stressi va homila natijalariga ta'sirini ko'rsatadigan kontseptual asos tug'ruqdan oldin parvarish qilishda maqsadli mikronutrient qo'shimchalarini kiritish zarurligini yanada kuchaytiradi.*

Kalit so'zlar: *selen etishmovchiligi, selenning toksikligi, homilador ayollarda selen qo'shimchasining klinik afzalliklari.*

Introduction

Optimal fetal development depends on the efficient transfer of nutrients and oxygen from the mother through the placenta, a complex organ that regulates fetal growth and metabolism. Fetoplacental insufficiency arises when the placenta cannot adequately support these essential functions, resulting in compromised fetal growth and increased risk of adverse pregnancy outcomes. This condition is often linked to oxidative stress and micronutrient imbalances that impair placental function, underscoring the importance of maternal nutrition in maintaining placental health and fetal well-being. Disruptions to placental nutrient metabolism can have lasting effects, influencing not only immediate fetal growth but also long-term disease susceptibility in offspring. Understanding this pathophysiology highlights the potential role of targeted nutritional interventions, such as selenium-containing drugs, to mitigate placental oxidative damage and support adequate nutrient exchange. Such interventions address crucial micronutrient deficiencies, which are central to improving pregnancy outcomes in vulnerable populations (Brabin et al.) (Janna L Morrison et al.).

Pregnancy complications such as fetal growth restriction and preeclampsia are closely linked to oxidative stress, which disrupts placental function and ultimately impairs fetal development. Selenium, a vital micronutrient, plays a critical role in maintaining antioxidant defenses by supporting the activity of selenoproteins that neutralize reactive oxygen species. Its involvement in modulating immune response and reducing inflammation further emphasizes its importance in sustaining a healthy pregnancy. Since oxidative stress contributes significantly to placental pathology, enhancing selenium status through supplementation may mitigate these effects, improving fetoplacental health and function. Dietary interventions aimed at reducing oxidative stress hold promise as low-risk therapeutic strategies during pregnancy (Schoots et al.)(Campmans-Kuijpers et al.). Supporting this notion, the conceptual model highlights how selenium deficiency exacerbates oxidative stress and placental dysfunction, driving adverse pregnancy outcomes . Thus, seleniums antioxidant and immunomodulatory capacities offer a compelling basis for its inclusion in drugs designed to prevent fetoplacental insufficiency.

Pregnancy represents a critical window during which maternal health, placental function, and fetal development are intricately connected, with disruptions often leading to adverse outcomes. Fetoplacental insufficiency, a condition characterized by inadequate placental function to meet fetal demands, can result in fetal growth restriction, preterm birth, and long-term health complications for the child. Addressing this insufficiency is essential because the placenta plays a pivotal role in nutrient transfer, detoxification, and endocrine signaling necessary for fetal development. Nutritional imbalances and environmental exposures notably influence placental vascular physiology, compounding risks associated with gestational diseases such as gestational diabetes mellitus, which further jeopardize fetal outcomes (Casanello et al.). Early intervention strategies, including meticulous micronutrient supplementation during the periconceptional period, could extend benefits to both maternal and fetal health, thereby improving placental function and preventing insufficiency (Brabin et al.). The conceptual model linking maternal micronutrient status, oxidative stress, and placental dysfunction underscores the foundational importance of such preventative measures.

Mechanisms of Selenium Action

The intricate interactions between maternal nutrition and placental health underscore the importance of micronutrients in pregnancy outcomes, particularly selenium. Selenium’s role extends beyond simple nutritional support, functioning as a critical element in the antioxidative defense through incorporation into selenoproteins such as glutathione peroxidases, which mitigate oxidative stress implicated in fetoplacental insufficiency "Selenium plays a crucial role in the antioxidant defense system, protecting cells from oxidative stress by being a key component of glutathione peroxidases." (Editorial). This antioxidative function helps maintain proper vascular physiology within the placenta, ensuring adequate nutrient and oxygen exchange necessary for fetal growth. Moreover, seleniums involvement in the maternal endo-exposome highlights its capacity to

counterbalance adverse environmental and metabolic insults, including those exacerbated by gestational diseases like diabetes mellitus, which further jeopardize placental function(Casanello et al.). Supplementation strategies, especially periconceptional ones, offer the possibility to enhance maternal and fetal selenium status early on, potentially improving placental development and combating pathophysiological mechanisms before clinical manifestations arise(Brabin et al.). The schematic in excellently represents how selenium-related oxidative balance influences placental integrity and pregnancy success.

Maternal oxidative stress has been identified as a critical factor compromising placental function, leading to fetoplacental insufficiency and adverse pregnancy outcomes. The pivotal role of selenium as an antioxidant stems from its incorporation into selenoproteins, including glutathione peroxidases and thioredoxin reductases, which neutralize reactive oxygen species and thus protect placental tissues from oxidative damage. This defense mechanism is especially crucial during pregnancy when increased metabolic demands elevate oxidative stress levels, potentially disrupting the delicate maternal-placental-fetal interface (Casanello et al.). Furthermore, the interplay between selenium and other trace elements within the placenta has been linked to birth outcomes, underscoring selenium's contribution to maintaining placental integrity and promoting fetal growth (Muela C et al.). The diagram illustrating maternal micronutrient deficiencies highlights how selenium deficiency exacerbates oxidative stress and impairs placental function, further emphasizing the importance of selenium supplementation in preventing fetoplacental insufficiency . Hence, selenium's antioxidant properties offer a compelling therapeutic avenue to enhance placental resilience and improve pregnancy prognosis.

Cellular signaling and gene expression are intricately modulated by trace elements that influence oxidative stress and inflammatory pathways, critical factors in maintaining placental health during pregnancy. Selenium plays a pivotal role as a component of selenoproteins, which modulate redox-sensitive signaling cascades and transcription factors involved in cellular proliferation, apoptosis, and immune regulation. These processes are essential in preventing abnormal placental development and fetoplacental insufficiency, a condition linked to elevated oxidative stress and impaired vascular function. Research indicates that selenium's influence on gene expression extends to regulating inflammatory responses and promoting an anti-oxidative environment, thereby supporting fetal growth and reducing pregnancy complications (Schoots et al.). Furthermore, dietary interventions targeting redox balance through selenium supplementation have shown promise in mitigating oxidative stress–related placental lesions, which aligns with broader strategies aimed at improving pregnancy outcomes through micronutrient optimization (Campmans-Kuijpers et al.). The integrated model of micronutrient deficiency impacting placental function is well illustrated in , highlighting selenium's central role in fetal-maternal health.

Proper placental development is critical for ensuring adequate nutrient and oxygen exchange between mother and fetus, directly influencing fetal growth and

pregnancy outcomes. Micronutrients like selenium play a pivotal role in modulating placental function by mitigating oxidative stress, which is a key factor in placental insufficiency. Selenium, as an essential component of antioxidant enzymes such as glutathione peroxidase, helps maintain redox balance within placental tissues, thereby supporting cellular integrity and vascular function. Insufficient selenium levels can lead to increased oxidative damage, impairing trophoblast invasion and placental vascularization, which may contribute to fetoplacental insufficiency. Emerging evidence highlights the potential of selenium supplementation in enhancing placental health, improving nutrient transfer, and reducing adverse pregnancy outcomes linked to placental dysfunction (Brabin et al.) (Janna L Morrison et al.). The pathway connecting maternal selenium status, oxidative stress reduction, and optimal placental function is integral to preventing long-term fetal complications, as conceptualized in models linking maternal micronutrient availability with placental and fetal health.

Clinical Benefits of Selenium-Containing Drugs

Optimal maternal nutrition profoundly influences placental function and fetal development, with selenium playing a critical role in mitigating oxidative stress, a key factor in fetoplacental insufficiency. Selenium-containing drugs enhance antioxidant defenses by supporting selenoproteins that regulate redox balance, thereby protecting placental tissue from oxidative damage and improving nutrient transfer to the fetus. This biochemical support is particularly vital during early gestation, aligning with the window of periconceptional supplementation, which has demonstrated potential in optimizing pregnancy outcomes by addressing micronutrient deficiencies before and during gestation(Brabin et al.). Furthermore, by facilitating proper placental metabolism, selenium contributes to mitigating adverse effects linked to maternal undernutrition, a concern highlighted in various populations(Janna L Morrison et al.). The mechanistic framework connecting selenium's antioxidant capacity to improved placental health and fetal growth is succinctly illustrated in Image1, which delineates the pathway from maternal micronutrient status through placental function to offspring health, reinforcing the clinical value of selenium-containing interventions in preventing fetoplacental insufficiency.

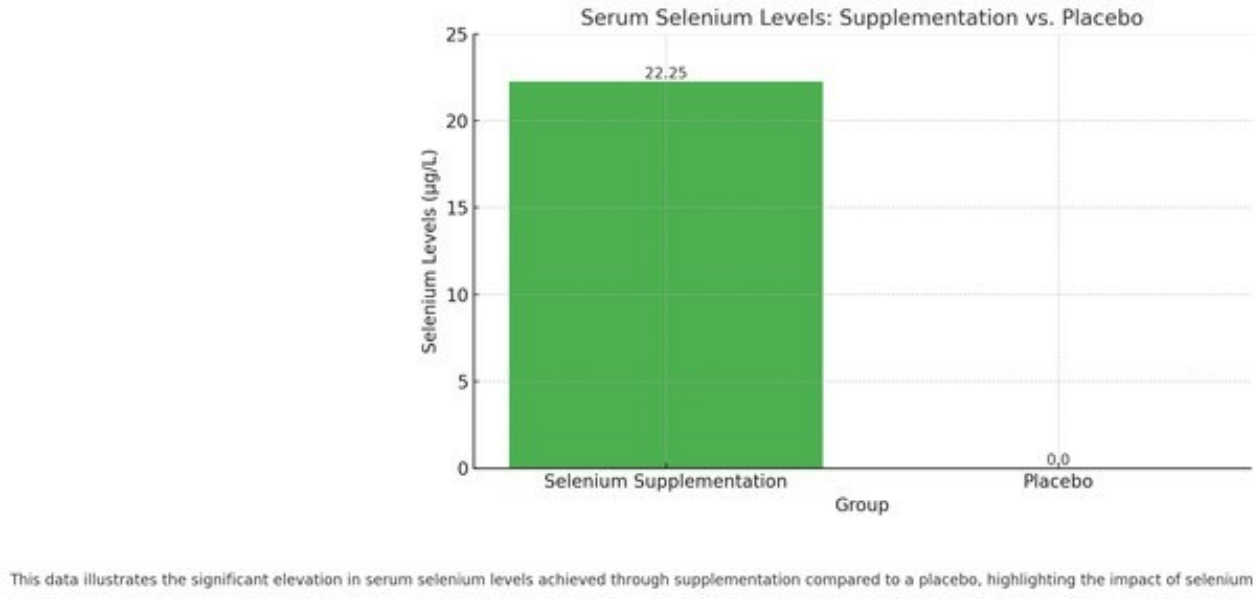
Outcome	**Selenium Supplementation**	**Placebo**	**P-Value**
Premature Rupture of Membranes (PROM)	13.1%	34.4%	<0.01
Pulsatility Index (PI) < 1.45	Higher percentage	Lower percentage	0.002
Total Antioxidant	82.88 mmol/L	Baseline	0.04

Capacity (TAC) Increase			
Total Glutathione (GSH) Increase	71.35 µmol/L	Baseline	0.03
High-Sensitivity C-Reactive Protein (hs-CRP) Reduction	-1.52	Baseline	0.03
Uterine Artery Pulsatility Index (PI) Decrease	-0.09	Baseline	0.04
Depression Score Improvement	-5.63	Baseline	<0.001
Anxiety Score Improvement	-1.99	Baseline	<0.001
Sleep Quality Score Improvement	-1.97	Baseline	<0.001

Clinical Benefits of Selenium Supplementation in Pregnant Women

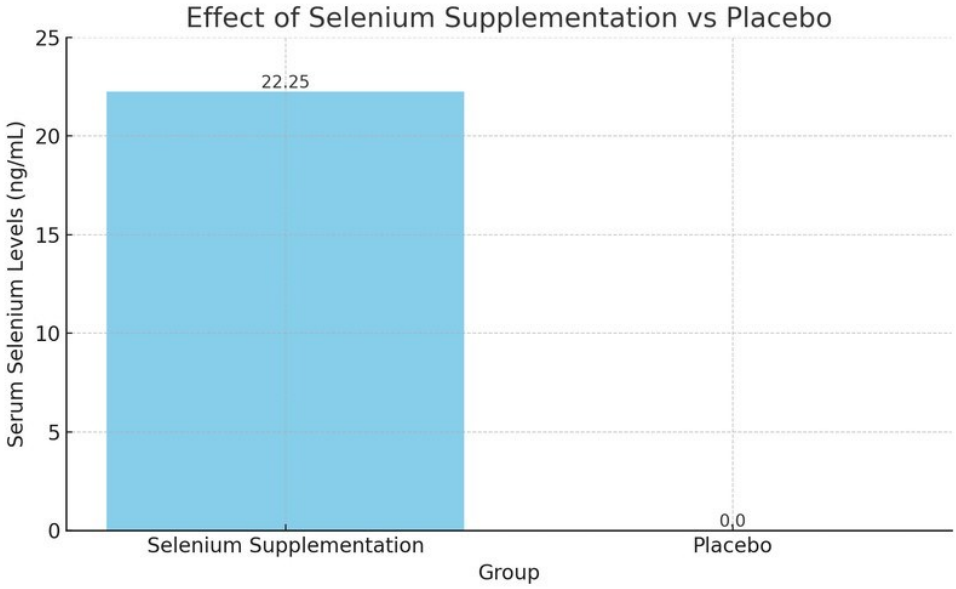
Clinical evidence underscores the critical role selenium plays in mitigating pregnancy complications related to oxidative stress and placental dysfunction. Studies focusing on pregnancies complicated by fetal growth restriction (FGR) revealed that oxidative stress, linked to inflammatory processes within the placenta, exacerbates histomorphologic ischemic changes, suggesting that modulating oxidative damage could improve placental health and fetal outcomes (Schoots et al.). Moreover, selenium's influence extends beyond antioxidative properties; it contributes to maintaining the intricate balance of maternal-placental-fetal communication disrupted in metabolic conditions like gestational diabetes mellitus (GDM), where both endogenous and environmental factors impact placental vascular physiology (Casanello et al.). Importantly, Selenium supplementation during pregnancy has been associated with improved placental function and reduced risk of fetoplacental insufficiency, which is corroborated by several clinical trials indicating that adequate selenium intake leads to better fetal growth and fewer

placental complications "Selenium supplementation during pregnancy has been associated with improved placental function and reduced risk of fetoplacental insufficiency." (Prognostic models in obstetrics: available, but far from applicable). This body of evidence strongly supports selenium-containing drugs as a promising intervention to prevent fetoplacental insufficiency.



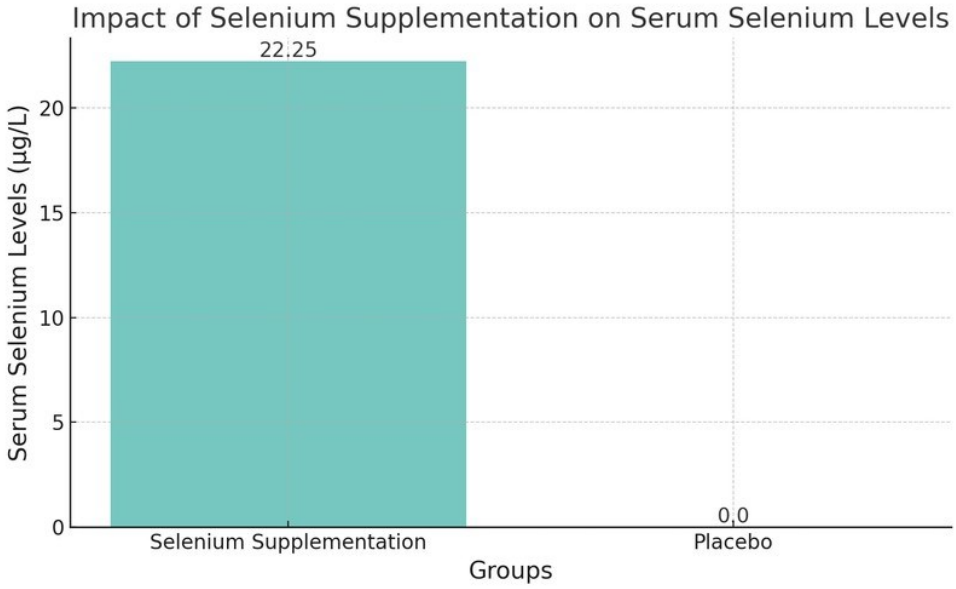
The chart presents a comparison of serum selenium levels between two groups: Selenium Supplementation and Placebo. The bar representing Selenium Supplementation shows a significant serum selenium level of 22.25 µg/L, while the Placebo group has no elevation in selenium levels. This illustrates the notable impact of selenium intake on maternal selenium status during pregnancy.

The intricate relationship between maternal nutrition and pregnancy outcomes is increasingly recognized as a critical factor in ensuring both maternal and fetal health. Selenium, an essential micronutrient, plays a pivotal role in this regard due to its involvement in antioxidant defense and immune function, which are crucial during pregnancy. Studies have indicated that selenium supplementation can enhance maternal antioxidant capacity, thereby reducing risks associated with oxidative stress such as preeclampsia and other hypertensive disorders. Moreover, the modulation of placental metabolism and function by selenium contributes to improved nutrient transfer, mitigating fetoplacental insufficiency and promoting optimal fetal growth. This aligns with evidence that “Selenium supplementation during pregnancy has been associated with improved maternal antioxidant status and a reduction in the incidence of preeclampsia.” Such benefits underscore the importance of targeted micronutrient intervention strategies, particularly in populations vulnerable to nutritional deficiencies, to support healthier pregnancy trajectories and better perinatal outcomes (Brabin et al.) (Janna L Morrison et al.).



This bar chart compares the serum selenium levels between two groups: Selenium Supplementation and Placebo. It highlights a significant elevation in selenium levels from supplementation, demonstrating the importance of selenium intake for maternal selenium status during pregnancy.

Optimal fetal development relies heavily on the intricate balance of maternal nutrition and placental function, both of which are susceptible to disruptions that can lead to fetoplacental insufficiency. Emerging evidence highlights that micronutrients, especially selenium, play crucial roles in maintaining placental health and preventing compromised fetal growth. Selenium's antioxidant properties mitigate oxidative stress—a critical factor implicated in placental dysfunction—thereby supporting adequate nutrient and oxygen delivery to the fetus. Notably, selenium supplementation during pregnancy has been associated with a decreased risk of fetoplacental insufficiency, potentially improving pregnancy outcomes. This aligns with broader research emphasizing the importance of micronutrient interventions in maternal diets to reduce adverse pregnancy complications and improve fetal viability(Janna L Morrison et al.). While the methodological complexity of periconceptional supplementation presents challenges, well-designed trials confirm that early selenium administration could substantively reduce the incidence of fetoplacental insufficiency by enhancing placental metabolism and fetal nutrition(Brabin et al.).



This bar chart visualizes the significant difference in serum selenium levels between the selenium supplementation and the placebo group. It clearly shows that selenium supplementation results in a substantial increase in serum selenium levels, demonstrating its impact on maternal selenium status during pregnancy.

Safety and Dosage Considerations

Ensuring maternal and fetal safety when administering selenium-containing drugs during pregnancy requires careful consideration of appropriate dosage and timing. Over-supplementation carries risks, potentially resulting in toxicity and adverse pregnancy outcomes, thus emphasizing the necessity for adherence to established nutritional guidelines. As research into micronutrient interventions, such as periconceptional supplementation, reveals complex methodological challenges—including non-pregnant cohorts and varying parity—the importance of precise dosage is underscored to avoid unintended harm while maximizing benefits(Brabin et al.). Moreover, the timing and monitoring of supplementation are critical, as inadequate prenatal care has been linked to increased risks of pre-eclampsia complications and unfavorable fetal outcomes(Shaker el Azzaz S et al.). Reflecting this prudence, it has been stated that Selenium supplementation during pregnancy should be approached with caution, as excessive intake may lead to adverse effects; therefore, it is essential to adhere to recommended dietary allowances to ensure maternal and fetal safety."Selenium supplementation during pregnancy should be approached with caution, as excessive intake may lead to adverse effects; therefore, it is essential to adhere to recommended dietary allowances to ensure maternal and fetal safety." (Questioning population strategies to reduce sodium intake: What is the goal?) This approach is supported by insights illustrated in , where the interplay between micronutrient balance and placental function is highlighted, reinforcing the necessity for regulated selenium administration in pregnancy.

Proper maternal nutrition is critical for maintaining placental function and ensuring optimal fetal development. Micronutrients like selenium play a vital role

in modulating oxidative stress, which is a recognized contributor to fetoplacental insufficiency. The recommended dietary allowances (RDAs) for selenium during pregnancy reflect the increased demand for antioxidant support to mitigate placental oxidative damage and promote healthy gestation. Adequate selenium intake supports glutathione peroxidase activity, enhancing the mother's ability to counteract reactive oxygen species generated during placental metabolism. This fortification aligns with evidence emphasizing early antenatal interventions to reduce adverse outcomes in pre-eclamptic patients through appropriate nutritional and pharmacological strategies (Shaker el Azzaz S et al.). Moreover, selenium's role in regulating inflammatory and stress responses complements hormonal adaptations mediated by glucocorticoids during pregnancy, underscoring the biochemical rationale for selenium supplementation (N/A). The conceptual pathways linking maternal micronutrient status to placental health and offspring outcomes further illustrate the critical importance of meeting RDAs for selenium during pregnancy .

Organization	**RDA (µg/day)**	**UL (µg/day)**
National Institutes of Health (NIH)	60	400
European Food Safety Authority (EFSA)	60	255
World Health Organization (WHO)	28	400
German, Austrian, and Swiss Nutrition Societies (D-A-CH)	60	300
Nordic Nutrition Recommendations	60	300

Recommended Dietary Allowances (RDA) and Tolerable Upper Intake Levels (UL) for Selenium During Pregnancy

The delicate balance of micronutrients during pregnancy is crucial for optimal placental function and fetal development. Selenium, as an essential trace element, plays a vital role in antioxidant defense and redox regulation within the placenta. Deficiency in selenium can disrupt these processes, leading to increased oxidative stress and impaired fetoplacental vascular physiology, thereby contributing to complications such as fetoplacental insufficiency and restricted fetal growth. Conversely, excessive selenium intake poses toxicity risks, including potential interference with essential metabolic pathways and adverse pregnancy outcomes.

Studies indicate that selenium concentrations in the placenta correlate with birth weight and maternal factors such as smoking, emphasizing the need for careful monitoring of selenium status. Moreover, various genetic polymorphisms involved in one-carbon metabolism may influence selenium's effect on pregnancy outcomes, underscoring its complex role in maternal-fetal health (Casanello et al.) (Muela C et al.). The balance of selenium is thus critical to prevent both deficiency-related complications and toxicity risks during pregnancy .

Condition	Associated Risks
Selenium Deficiency	Miscarriage, pre-eclampsia, gestational diabetes, fetal growth restriction, preterm birth
Selenium Toxicity	Potential teratogenic effects, though human fetuses are generally well protected against selenium-linked toxicity

Risks Associated with Selenium Deficiency and Toxicity During Pregnancy

Ensuring optimal maternal and fetal health requires meticulous attention to micronutrient supplementation during pregnancy, with selenium-containing drugs playing a pivotal role in mitigating fetoplacental insufficiency. Guidelines emphasize early antenatal care booking to identify women at risk and establish appropriate supplementation protocols, recognizing that the timing and dosage of selenium administration are critical for efficacy and safety (Shaker el Azzaz S et al.). Emerging evidence supports periconceptional interventions, which extend benefits by improving maternal and fetal nutrition from the earliest stages, yet they also demand careful trial design to balance efficacy and maternal-fetal safety (Brabin et al.). Monitoring adherence and evaluating baseline selenium status is vital to tailor supplementation and avoid toxicity. Integrating these guidelines within the broader context of maternal micronutrient status underscores the complex interplay between oxidative stress and placental function, as depicted in , which illustrates how maternal selenium intake influences pregnancy outcomes through its antioxidant properties and role in maintaining placental health. This integrative approach offers a foundation for optimizing clinical benefits while minimizing risks.

Conclusion

Optimizing maternal nutrition through targeted micronutrient supplementation emerges as a crucial strategy for enhancing placental function and fetal health outcomes. Selenium-containing drugs, by mitigating oxidative stress and supporting placental metabolism, offer significant promise in preventing fetoplacental insufficiency, a condition linked to adverse pregnancy outcomes and long-term offspring health risks (Janna L Morrison et al.). Moreover, comprehensive antenatal care, including early risk assessment and supplementation, plays a vital role in reducing complications associated with compromised placental function, as inadequate antenatal visits correlate with increased maternal and fetal morbidity (Shaker el Azzaz S et al.). The intricate relationship between maternal micronutrient status and placental efficiency underscores the necessity of integrating selenium supplementation into prenatal protocols. This approach not only addresses immediate pregnancy complications but also contributes to improving lifelong health trajectories. Visual frameworks that delineate the impact of maternal diet and micronutrient deficiencies on placental function and offspring disease risk further emphasize the systemic importance of selenium in pregnancy management.

Optimal maternal nutrition is critical for ensuring proper placental function and fetal development, with micronutrients playing essential roles in these processes. Selenium, an indispensable trace element, acts as a potent antioxidant that mitigates oxidative stress implicated in fetoplacental insufficiency, thereby enhancing placental efficiency and reducing pregnancy complications. Its involvement in selenoproteins contributes to the regulation of immune responses, thyroid hormone metabolism, and vascular health, all vital for sustaining fetal growth. Clinical studies have suggested that selenium supplementation during pregnancy can improve endothelial function and decrease the incidence of conditions such as preeclampsia, which directly threaten placental blood flow. Moreover, integrating selenium into maternal diets addresses deficiencies that might otherwise exacerbate oxidative damage and inflammation in placental tissue. Given the complexity of placental-nutrient interactions and their long-term impact on offspring health, selenium’s protective role highlights the importance of targeted micronutrient interventions before and during pregnancy (Brabin et al.)(Janna L Morrison et al.). The conceptual framework of maternal micronutrient influence on placental function is effectively illustrated in Image1.

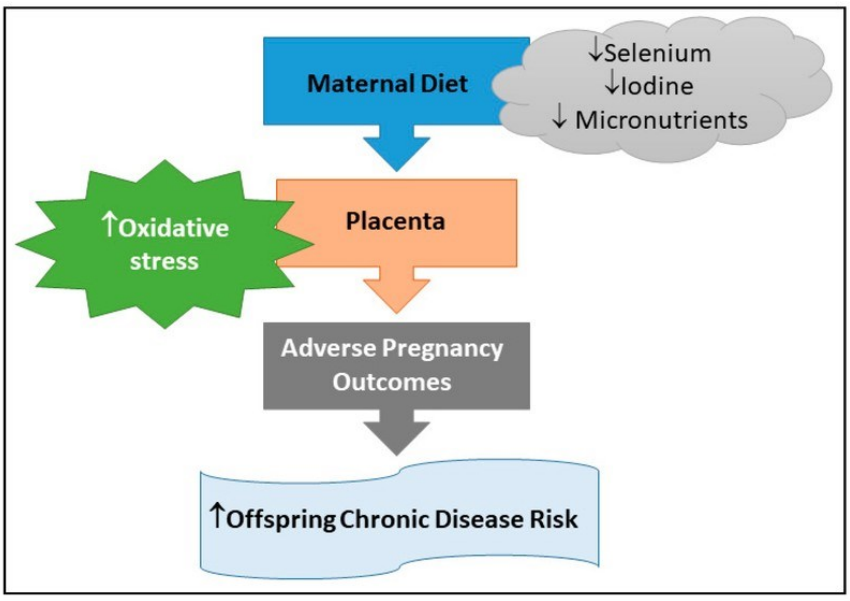


Image1. Conceptual model linking maternal micronutrient deficiency to offspring chronic disease risk.

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Jo‘rayeva D.O‘.
Maktabgacha ta’lim kafedrasi o‘qituvchisi
Buxoro davlat pedagogika insituti

MAKTABGACHA TA’LIM TASHKILOTLARIDA TABIAT HAQIDAGI TUSHUNCHALAR ALLOMALAR QARASHLARI MISOLIDA

Annotatsiya. *Maktabgacha tarbiya yoshi kamol topishning bir-biridan ancha farq qiladigan davrlarini qamrab oladi. Bugungi maktabgacha tarbiya yoshidagi bolalarni tarbiyalash vazifalarini pedagogika fanining aloxida tarmog‘i sifatida e’tirof etiladi.*

Kalit so‘zlar: *Maktabgacha ta’lim,oila, mahalla,o‘yin, maktab, bolalar, aqliytarbiya, rivojlanish, bilim, ko‘nikma, malaka, tarbiyachi,ekologiya,ekologik tarbiya,sog’lom turmush tarsi.*

Jurayeva D.O.
teacher
Department of Preschool Education
Bukhara State Pedagogical Institute

CONCEPTS OF NATURE IN PRESCHOOL EDUCATIONAL ORGANIZATIONS ON THE EXAMPLE OF THE VIEWS OF SCIENTISTS

Annotatsion. *Preschool education covers several distinct periods of development. Today, the tasks of educating preschool children are recognized as a separate branch of pedagogical science.*

Key words: *Preschool education, family, neighborhood, play, school, children, intellectual development, development, knowledge, skills, qualifications, educator, ecology, ecological education, healthy lifestyle.*

Tashqi muhit tomonidan ko‘rsatilayotgan ta’sir inson organizmining o‘sishi va rivojlanishi uchun nihoyatda muhimligini chuqur anglash asosida alloma ayrim kasalliklarning suv yoki havo orqali tarqalishi, ularning oldini olish borasida ko‘rilishi zarur bo‘lgan chora-tadbirlar xususida batafsil ma’lumot berib o‘tadi. “Kasalliklarning ba’zilari yuqumli bo‘ladi. Bular mohov, qo‘tir, chechak, vabo isitmasi, yiringlangan yaralar kabi kasalliklardir.

Yusuf Xos Hojib salomatlik inson hayotining bahtli kechishini ta’minlovchi asosiy omil ekanligini ta’kidlaydi. Xususan, “Kishi uchun salomatlik kerak, mol-dunyo esa topiladi, qushga hayot kerak, don esa topiladi”, “Inson tirik bo‘lsa, uning tilagi ravshandir, jon va bosh omon bo‘lsa, orzu yaqindir” mazmunidagi fikrlarni ilgari surish bilan shaxsiy salomatlik, shuningdek, atrofdagilarning sihatini saqlash to‘g‘risida g‘amxo‘rlik qilish har bir insonning burchi ekanligini aytadi.

Shuningdek, alloma inson salomatligini saqlash tabiatni asrash, uning boyliklaridan maqsadga muvofiq foydalanish evaziga kechishin alohida ta'kidlaydi.

Beruniyning "Saydana", "Minerologiya", "Qadimiy xalqlardan qolgan yodgorliklar" asarlarida o'simlik va hayvonlarning biologik xususiyatlari, ularning ahamiyati haqida ma'lumot beriladi. Beruniy "Qadimgi xalqlardan qolgan yodgorliklar" asarida Eronning tropik hayvonot dunyosini bayon etgan. Ushbu asarda o'simlik va hayvonlarning tashqi muhit bilan aloqasi, ularning xulq-atvori yil fasllarining o'zgarishi bilan bog'liq ravishda o'zgarishi, sovuq kelsa, chumolilarning uyasiga bekinib olishi, qushlarning tog'dan tekisliklarga tushishi va hakozolar ifoda etiladi. [2.2;48]

Beruniy yoshlik davrlaridan tabiat shaydosi bo'lgan. Yer qiyofasi o'zgarishi o'simlik va hayvonot dunyosiga ta'sir etishini, qumni kovlab, uning orasidan chig'anoqni topish mumkin deydi. Sababi, bu qumlar qachonlardir Oksan tubi bo'lgan degan xulosaga keladi u.

Zahiriddin Muxammad Bobur (1483-1530) nafaqat shoir, balki podshoh, tarixchi, mashshoq, ovchi, bog'bon, sayyox va tabiatshunos ham bo'lgan.

"Boburnoma" -Boburning eng yirik asaridir. Asarda Boburning ko'rgan-kechirganlari, yurgan joylarining tabiati, boyligi, odamlari, urf-odatlari, hayvonoti, o'simliklari tasvirlangan. Asar muhim atamalar va toponamik manbalarga boy. Bobur har bir xududni ma'lum bir tartibda tasvirlaydi. Avvalo joyning geografik o'rni so'ngra qaysi iqlimga mansubligi, xar xil shifobaxsh joylari, o'simlik, qazilmalari, hayvonoti va axolisi beriladi.

Bobur tabiatdagi ba'zi hodisalarni tasvirlaganda ularni mutlaqo mo'jizalarga bog'lamaydi.

Bobur ajoyib giobotanik bo'lgan. U o'simliklarni xosiyatlari, ahamiyatini ta'riflaganki, bog'bon yoki asl tabiatshunos buning uddasidan chiqa oladi.

Bobur ovga juda qiziqar edi. U O'rta Osiyo, Avg'oniston, Xuroson va Xindistondagi hayvonlarni batafsil bayon etgan. Uningcha: o'sha davrlarda Farg'ona vodiysida antiloplar, tog' qo'ylari va yirik yirtqich qushlar, Samarqandda esa jayronlar, Buxoro antilopi, tog' echkilari, kakliklar va boshqa hayvonlar ko'p bo'lgan.

Qizil kitob - bu yo'qolgan yoki yo'qolish arafasida turgan, yo'qolib borayotgan, kamyob va kamayib borayotgan o'simlik va hayvonot dunyosining genofondini saqlab qolish maqsadida tashkil tilgan ma'lumotlar ro'yxati (reestri) 1940 yil Xalqaro tabiatni qo'riqlash ittifoqchi "xalqaro qizil kitob"ga ma'lumotlar to'plangan va 1966 yil "Qizil kitob faktlari" nomi bilan chop etilgan. Unga keyingi 14 yil ichida yo'qolish arafasida turgan 138 o'simlik turi kiritilgan bo'lib, ularning soni 163-301 taga etgan.

O'zbekiston hayvonot va O'simlik olamining xilma-xilligi hamda boyligi bilan ajralib turadi.

Yo'qolib borayotgan o'simlik va hayvonot olamini saqlab qolish va ularning sonini ko'paytirish maqsadida Respublikamizda «Qizil kitob»lariga (1 tom 1983 yil, 2 tom 1984 yil) sut emizuvchilardan 22 turi, qushlardan 31 turi, sudralib

yuruvchilardan 5 turi, baliqlardan 5 turi, yuqori gulli o‘simliklardan 163 turi kiritilgan.

1994 yili O‘zbekiton “Ekologik ta’lim konsepsiyasi” qabul qilingan. Uning asosiy maqsadi, uzluksiz ta’limning hamma bosqichlarida ekologik ta’limni amalga oshirishdan iboratdir.

Ekologiya fanining asosiy maqsadi. Yer sharini, undagi biologik rang-baranglikni, eng muhimi, insonni saqlab qolish. Demak, ekologiya fanining asosiy predmeti – inson. Atrof-muhit bilan inson o‘rtasidagi munosabatlarni o‘rganuvchi fanga «*ekologiya*» deyiladi. Sodda qilib aytganda, ekologiya o‘simlik o‘simlik, hayvon bilan hayvon, hayvon bilan o‘simlik, hayvon-o‘simlik-inson, inson bilan inson, narsalar, predmetlar o‘rtasidagi munosabatlarni o‘rganuvchi fan. Ekologiya fani turli-tuman yo‘nalishga ega: ilmiy, iqtisodiy, huquqiy, texnik, falsafiy, estetik, pedagogik, siyosiy, psixologik, gigienik va hokazo.

Jamiyat va tabiat o‘rtasida o‘zaro paydo bo‘lgan yangi ekologik g‘oyalarni ongli ravishda anglab, ularni ilmiy jixatdan xal etish usullari ekologik fikrlash deb ataladi.

Ekologik ta’lim konsepsiyasining maqsad va tamoyillari.

Atrof-muhit sohasidagi ta’lim aholini tabiatga nisbatan ongli munosabatda bo‘lish ruhida tarbiyalash uchun zarur.

Odamlar XXI asr va undan keyin paydo bo‘ladigan ekologiya muammolari his etmog‘i, ularni hal etish va oldini olish uchun zarur nazariy va amaliy bilim, malaka, ko‘nikmalarni egallash imkoniyatiga ega bo‘lmoqlari lozim.

Bunday ekologik ta’lim dasturi atrof-muhitning ifloslanishini o‘rganish bilan cheklanmasligi kerak. Kelajakda paydo bo‘ladigan ekologik muammolarning kelib chiqish mexanizmini ham hozirdanoq ta’lim-tarbiya tizimiga singdirib, ularni yoshlarga o‘rgatishning shakl va metolarini ishlab chiqish zarur.

Ekologik ta’limning bosh maqsadi – aholining barcha qatlamlarida jumladan, maktab o‘quvchilarida atrof-muhitga, uni asrash muammolariga ongli munosaabtni shakllantirishdan iborat. Buning uchun axolining barcha qatlamlari ekologiyaga oid davlat talablari darajasida bilim egallashlari, etarli ko‘nikma va malakaga ega bo‘lishlari kerak.

Ayni vaqtda aholi sog‘ligini mustahkamlashda yordam beradigan omillardan foydalanish, yuqumsiz kasalliklar (yurak-tomir kasalliklari, revmatizm, xavfli o‘smalar)ning oldini olish, yangi ishlab chiqarish omillarining sog‘liqqa ta’siri uzoq umr ko‘rish masalalariga borgan sari katta e’tibor berilmoqda.

FOYDALANILGAN ADABIYOTLAR RO‘YXATI:

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MAKTABGACHA TA’LIM TASHKILOTLARI TARBIYALANUVCHILARDA EKOLOGIK BILIMNI RIVOJLANTIRISH ISTIQBOLLARI

Annotatsiya. *Maktabgacha ta’lim tashkiloti hozirgi vaqtda ekologik, sanitariya-gigiyenik bilimlarning targ‘iboti markaziga aylanishi, bolalarni ekologik-gigiyenik bilim, ko‘nikma va malakalar bilan qurollantirishning muhim omillaridan biri ota-onalarning ekologik-gigiyenik bilimlarga ega bo‘lishlariga erishish, ana shu maqsadda ota-onalar o‘rtasida tibbiy-ekologik bilimlarni targ‘ib etish maqsadga muvofiqdir.*

Kalit so‘zlar: *Maktabgacha ta’lim,oila,mahalla,o‘yin, maktab, bolalar, aqliytarbiya, rivojlanish, bilim, ko‘nikma, malaka, tarbiyachi,ekologiya,ekologik tarbiya,sog’lom turmush tarsi.*

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PROSPECTS FOR DEVELOPING ECOLOGICAL KNOWLEDGE IN STUDENTS OF PRESCHOOL EDUCATIONAL ORGANIZATIONS

Annotatsion.*One of the important factors in the current transformation of preschool educational organizations into centers for the promotion of environmental, sanitary and hygienic knowledge, and in equipping children with environmental and hygienic knowledge, skills and qualifications, is the acquisition of environmental and hygienic knowledge by parents. For this purpose, it is advisable to promote medical and environmental knowledge among parents.*

Key words: *Preschool education, family, neighborhood, play, school, children, intellectual development, development, knowledge, skills, qualifications, educator, ecology, ecological education, healthy lifestyle.*

O‘zbekiston Respublikasi ijtimoiy-siyosiy mustaqillikni qo‘lga kiritgandan so‘ng o‘tgan vaqt mobaynida Respublika hukumati tomonidan mintaqada yuzaga kelgan ekologik xavfni bartaraf etish, bu borada barqarorlikka erishish, aholi o‘rtasida keng tarqalayotgan hamda ekologik muammolar asosida kelib chiqayotgan turli kasalliklarning oldini olish, aholi, shu jumladan, yoshlar o‘rtasida sog‘lom turmush tarzi g‘oyalarini targ‘ib etish, ularda sog‘lom turmush tarzi ko‘nikmalarini shakllantirish masalalariga alohida e’tibor qaratilmoqda. Mazkur e’tiborning yorqin dalili sifatida O‘zbekiston Respublikasida “EKOSAN”,

Respublika hukumatining tashabbusi bilan ”Orolni qutqarish” Xalqaro jamg‘armasining tashkil etilishi, shuningdek, “Atrof-muhitni muhofaza qilish Milliy dasturi”, “Sog‘lom avlod Davlat dasturi”, “Ona va bola Davlat dasturi” kabilarning qabul qilinganligi, “Ekologik ta’lim-tarbiya Kontseptsiyasi”ning ishlab chiqilganligi kabi holatlarni keltirib o‘tishimiz maqsadga muvofiqdir. Ekologik-gigiyenik tarbiya uzluksiz bo‘lib, u insonning butun hayoti davomida amalga oshirilishi kerak. Ekologik tarbiya umumiy tarbiyaning yangi shakli va tarkibiy qismi bo‘lib, Maktabgacha ta’lim tashkilotdagi barcha fanlarni o‘qitish, mashg‘ulotdan va Maktabgacha ta’lim tashkilotidan tashqari jarayonlarda ham amalga oshirilishi zarur.

Maktabgacha ta’lim tashkiloti bolalarining ekologik-gigiyenik bilimlardan to‘laqonli xabardor bo‘lishlari tobora keskin tus olib borayotgan ekologik xavf va uning oqibatida insonlarda yuzaga kelayotgan turli kasalliklarning oldini olishda muhim ahamiyat kasb etadi. Biroq Maktabgacha ta’lim tashkiloti bolalarining bu boradagi bilimlari yuqori darajada emas. Buning bir necha sabablari bo‘lib, ulardan biri ekologik-gigiyenik bilimlar asoslari xususida ma’lumot beruvchi manbalarning taqchilligi yoki mavjud adabiyotlarning aksariyat hollarda rus tilida ekanligidir. Rus tilida nashr etilgan adabiyotlar mazmunini o‘rganish muayyan qiyinchiliklarni yuzaga keltirmoqda.

Hozirgi kunda Maktabgacha ta’lim tashkiloti larida ekologik-gigiyenik tarbiya ishlari orqali sog‘lom turmush tarzini shakllantirish va sog‘lom avlodni tarbiyalash masalalariga Respublikamiz rahbariyati tomonidan katta e’tibor berilmoqda. Buni biz Respublikamizda dunyoda birinchi bo‘lib “Sog‘lom avlod uchun” ordeni va shu nomdagi Xalqaro jamg‘armaning tashkil qilinishida yaqqol ko‘rishimiz mumkin. O‘zbekiston Respublikasi Prezidenti Sh.M.Mirziyoyevning “Sog‘lom turmush tarzini keng tatbiq etish va ommaviy sportni yanada rivojlantirish chora-tadbirlari to‘g‘risida” 2020-yil 30-oktabrdagi PF-6099-farmonida ham ko‘zda tutilgan hisoblanadi. Bugungi kunda ekologik xavfning oldini olish, tabiatni asrash va uning mavjudligini ta’minlash masalasi xalqaro maydonda o‘ziga xos dolzarblik kasb etmoqda. Ekologik muammolarning ijobiy hal etilishi nafaqat tabiatni asrash, balki inson salomatligini saqlashda ham alohida ahamiyatga ega.

Asrlar davomida tabiatni asrash, uning boyliklaridan isrofgarchilikka yo‘l qo‘ymay foydalanish, inson salomatligini ta’minlash va ushbu jarayonda tabiatning beg‘araz yordamiga murojaat etish masalalari jamiyatning ilg‘or kishilari, xususan, allomalarning diqqat-e’tiborida bo‘lib kelgan.

Muammoga oid adabiyotlar mazmuni bilan tanishish shundan dalolat berdiki, kishilar o‘rtasida ekologik va gigiyenik bilimlarni targ‘ib etish, bu boradagi ta’limiy va tarbiyaviy qarashlar asosida ularda muayyan bilimlarning hosil bo‘lishiga erishish ijtimoiy zaruriyatga aylangan.

Markaziy Osiyoda ekologik va gigiyenik bilimlarning rivojlanishi o‘ziga xos tarixga ega. Qadim zamonlarda O‘rta Osiyo aholisi qaysi hayvon va o‘simlik mahsulotlaridan iste’mol qilish mumkinligi, suv manbalarini tanlashda va issiq iqlim sharoitida turar joylarni qurish, kiyinish to‘g‘risida ma’lumotlarga ega bo‘lishgan.

O‘sha davrlarda odamlarda kasallikning kelib chiqishi to‘g‘risida yetarli tushuncha bo‘lmaganligi sababli empirik holda xalq tabobati bo‘lgan. Xalq tabobatiga oid ma’lumotlar uzoq muddat davomida avloddan avlodga o‘tib, kelgusida tibbiyot kasbiga aylanish uchun asos bo‘lgan. Lekin, ko‘pchilik aholi xalq tabobati hamda u bilan shug‘ullanuvchi kishilar (tabib, eshon, kinnachi va hokazolar) yordamida muayyan kasallikni davolash bilan kifoyalanishgan. Bu kabi chora-tadbirlar asosida asosan ma’lum kasallikka emas, kasallikning ayrim ko‘rinishlariga qarshi davo qidirilgan.

Feodalizm davrida O‘rta Osiyoda boshqa fanlar qatori tibbiyot fanining ham rivojlanishi kuzatiladi. Mazkur fanning rivoji xalqlar o‘rtasidagi o‘zaro munosabatlarning rivojlanishi, ushbu munosabatlarning ravnaqida muhim o‘rin tutgan Buyuk Ipak yo‘lining aynan Markaziy Osiyo hududidan o‘tishi o‘ziga xos ahamiyatga ega bo‘lgan.

Arxeologik izlanishlar natijalari Markaziy Osiyo hududida tibbiyot fani juda qadim zamonlarda ham rivojlanganligini isbotlagan. Chunonchi, Farg‘ona viloyati hududida topilgan pishgan loydan yasalgan vodoprovod trubalarining qoldiqlari juda qadim zamonlardayoq ushbu hududda yashagan kishilarning ichimlik suvi va uning saqlanish holati, muhofazasiga alohida e’tibor qaratganliklaridan dalolat beradi.

Markaziy Osiyo xalqlarining tibbiyotga oid yozma ma’lumotlari miloddan avvalgi X-IX asrlarga tegishli. Ana shunday ma’lumotlar “Avesto” asarida hamda o‘z ifodasini topgan. Ushbu asarda diniy qarashlar, urf-odatlarning mohiyatini ochib berishga xizmat qiluvchi g‘oyalar bilan bir qatorda gigiyenik ma’lumotlar ham berilganki, bu holat miloddan avvalgi VII-I asarlarda ham inson salomatligini saqlash borasidagi bilimlar bayon etiladi.

“Avestoda” yer, suv, zamin, xona, badan, kiyim-kechak, oziq-ovqatlarni toza tutish va saqlashga alohida e’tibor berilgan. Unda go‘ristonlarni shahar va qishloqdan yiroqda tashkil etish, uni o‘rab qo‘yish, murdashuylarni maxsus tozalikka rioya qilishi, murda tekkan libos, yerlarni qatron qilish (suvga to‘ldirib bo‘shatish, yomg‘ir suvi bilan yuvish, to‘ldirib bo‘shatish ta’kidlanadi…. Inson yashayotgan xonadagi obrezxonada yuvinish va cho‘milish qat’iyan man etilgan».

“Avesto” asarida, shuningdek, atrof-muhit muhofazasini ta’minlash hamda inson salomatligi yo‘lida ma’lum chora-tadbirlarning ko‘rilishi maqsadga muvofiqligi aytib o‘tiladi.

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BOSHLANG'ICH SINF O'QUVCHILARINING JAMOADA ISHLASH KO'NIKMALARINI RIVOJLANTIRISHGA TA'SIR ETUVCHI OMILLAR

Annotatsiya: *Ushbu maqolada boshlang'ich sinf o'quvchilarining jamoada ishlash ko'nikmalarini rivojlantirishga ta'sir etuvchi omillar, ushbu omillar ta'sirida o'quvchilar kelajakda nafaqat akademik muvaffaqiyatlarga, balki ijtimoiy hayotda samarali hamkorlik qila oladigan, mas'uliyatli va ijodkor shaxs sifatida rivojlana olishlari xususida fikr yuritiladi.*

Kalit so'zlar: *empatiya, ochiq fikr almashish, ochiq sinf muhiti, jamoaviy ish ko'nikmalari, ijtimoiy o'zaro ta'sir, kollaborativ texnologiyalar*

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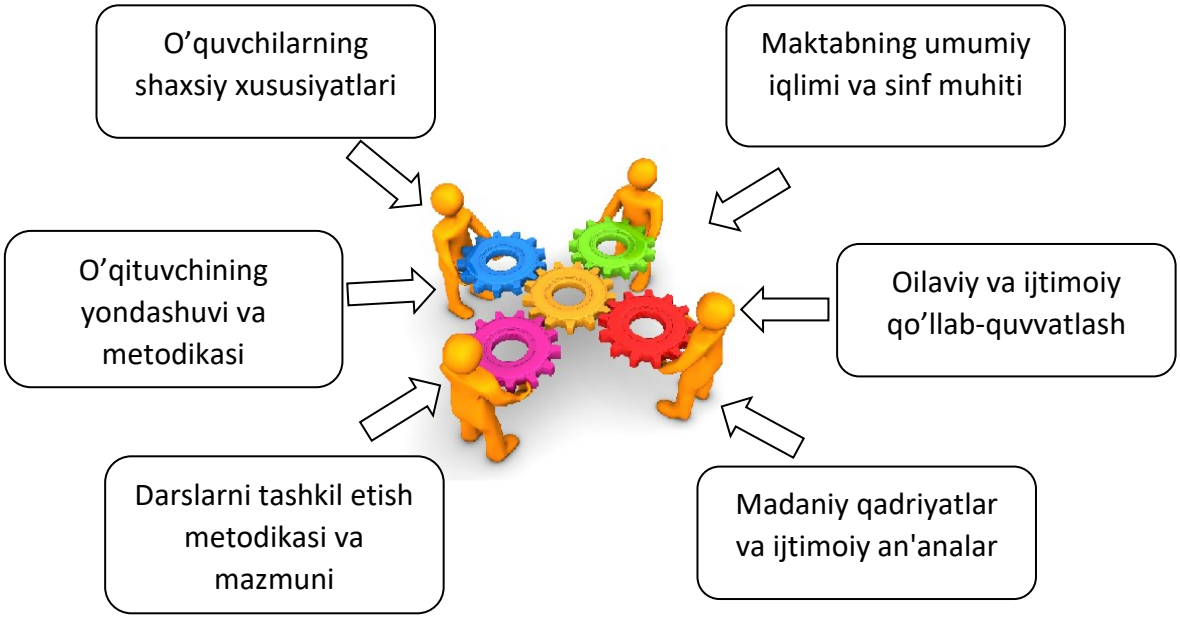
FACTORS AFFECTING THE DEVELOPMENT OF TEAMWORK SKILLS IN PRIMARY STUDENTS

Annotation: *this article reflects on the factors affecting the development of teamwork skills of Primary School students, on the fact that under the influence of these factors, students will be able to develop in the future not only to academic success, but also as a responsible and creative person who can effectively cooperate in social life.*

Keywords: *empathy, open mind sharing, open class environment, teamwork skills, social interaction, collaborative technologies*

Boshlang'ich sinf o'quvchilarining jamoada ishlash ko'nikmalarini rivojlantirishga ta'sir etuvchi omillar juda murakkab va ko'p qirrali bo'lib, ular o'quv jarayonining turli jihatlari, o'quvchilarning shaxsiy xususiyatlari, o'qituvchining yondashuvi, maktab muhitining tashkil etilishi, shuningdek, oilaviy va ijtimoiy sharoitlar bilan chambarchas bog'liqdir.

Shundan kelib chiqib, boshlang'ich sinf o'quvchilarining jamoada ishlash ko'nikmalarini rivojlantirishga ta'sir etuvchi asosiy omillarni ko'rib chiqamiz (1-rasm):



1-rasm. Boshlang‘ich sinf o‘quvchilarining jamoada ishlash ko‘nikmalarini rivojlantirishga ta’sir etuvchi omillar

1. O‘quvchilarning shaxsiy xususiyatlari. Har bir bolaning shaxsiyati, psixologik salohiyati, emotsional va ijtimoiy rivojlanish darajasi uning jamoaviy ishlashdagi muvaffaqiyatiga bevosita ta‘sir ko‘rsatadi. Masalan, empatiya, ochiq fikr almashish, o‘zini ifoda etish qobiliyati va boshqa ijtimoiy ko‘nikmalar o‘quvchilarga jamoa ichida samarali muloqot qilish va boshqalar bilan hamkorlikda ishlash imkonini beradi. Shuningdek, o‘z-o‘zini boshqarish, o‘ziga ishonch va mas‘uliyatni his qilish kabi fazilatlar ham guruhdagi rolini aniq belgilash va vazifalarni bajarishda muhim omil hisoblanadi.

2. O‘qituvchining yondashuvi va metodikasi. O‘qituvchining darslarni tashkil etish uslubi, metodikasi va o‘quvchilarga jamoaviy ishning ahamiyatini yetkazishdagi yondoshuvi katta rol o‘ynaydi. Interaktiv metodlar, rolli o‘yinlar, guruhiy muhokamalar va ijodiy topshiriqlar orqali o‘qituvchi o‘quvchilarga jamoada ishlashning nafaqat nazariy, balki amaliy jihatlarini ham o‘rgatadi. Shunday yondashuv o‘quvchilar orasida ishonch, hamkorlik va o‘zaro hurmatni mustahkamlashga yordam beradi.

3. Darslarni tashkil etish metodikasi va mazmuni. Dars rejalari va mazmuni jamoaviy ishga moslashtirilgan bo‘lishi lozim. Agar darslar guruhiy faoliyatlar, loyiha ishlari va interaktiv mashg‘ulotlar asosida tashkil etilsa, o‘quvchilarga birgalikda ishlash, vazifalarni bo‘lishish va rejalashtirish kabi ko‘nikmalarni o‘zlashtirish imkoniyati yaratiladi. Mazmunning dolzarbligi va moslashuvchanligi o‘quvchilarning qiziqishini oshiradi hamda ularning birgalikda muammolarni yechish jarayonini rag‘batlantiradi.

4. Maktabning umumiy iqlimi va sinf muhiti. Ijobiy, qo‘llab-quvvatlovchi va ochiq sinf muhitining mavjudligi o‘quvchilarning jamoada ishlash ko‘nikmalarini

rivojlantirishda muhim omil hisoblanadi. Sinfda qulay mebellar, moslashtirilgan darsliklar, interaktiv texnologiyalar va boshqaruv uslublari o‘quvchilarga o‘zlarini erkin his qilish, fikr almashish va guruhga faol qo‘shilish imkoniyatini beradi. Bunday muhitda o‘quvchilar bir-birlariga nisbatan hurmat, yordam va muloqot qadriyatlarini o‘zlashtiradilar.

5. Oilaviy va ijtimoiy qo‘llab-quvvatlash. Ota-onalar va yaqin qarindoshlardan keladigan tarbiyaviy qo‘llab-quvvatlash, shuningdek, keng jamoatchilikning ijtimoiy qadriyatlari ham o‘quvchilarning jamoada ishlashga bo‘lgan munosabatini shakllantiradi. Agar oilada hamkorlik, hurmat va qo‘llab-quvvatlash qadriyatlari targ‘ib etilsa, bola maktabda va boshqa ijtimoiy muhitlarda ham shu qadriyatlarni namoyon etishga intiladi. Bu esa jamoaviy ish ko‘nikmalarining mustahkamlanishiga yordam beradi.

6. Madaniy qadriyatlar va ijtimoiy an’analar. Jamiyatdagi madaniy qadriyatlar, urf-odatlar va an‘analar o‘quvchilarning jamoaviy ishlashga bo‘lgan munosabatiga ta‘sir qiladi. Agar mintaqda kollektivlik, birgalikda ishlash va o‘zaro yordam kabi qadriyatlar keng tarqalgan bo‘lsa, o‘quvchilar bu qadriyatlarni o‘zlashtirib, guruhda faol ishtirok etishga moyil bo‘ladilar. Shu tarzda, madaniy omillar ham jamoaviy ish ko‘nikmalarining shakllanishida o‘z o‘rnini egallaydi.

Har bir omil bir-biri bilan chambarchas bog‘liq bo‘lib, ular uyg‘un ishlaganda o‘quvchilarning jamoada ishlash ko‘nikmalarini yanada chuqurroq, samaraliroq shakllantirishga yordam beradi. Ushbu omillar ta’sirida o‘quvchilar kelajakda nafaqat akademik muvaffaqiyatlarga, balki ijtimoiy hayotda samarali hamkorlik qila oladigan, mas’uliyatli va ijodkor shaxs sifatida rivojlanadilar.

Hamkorlikda ishlash ko‘nikmasining tarkibiy qismlari:

– umumiy maqsadlarni o‘z maqsadidek qabul qilish qobiliyati, ularga erishish uchun birgalikda harakat yo‘nalishini qurish qobiliyati;

– ijtimoiy o‘zaro ta’sir, ya’ni umumiy maqsadlarni muhokama qilish, muzokaralar olib borish, o‘z harakatlarini boshqa odamlarning harakatlari bilan muvofiqlashtirish;

– o‘z rejalari va g‘oyalarini amalga oshirish uchun yetakchilik ko‘nikmalarini va o‘z jamoasini shakllantirish qobiliyatini rivojlantirish;

– o‘z zimmasiga olgan majburiyatlarni bajarish;

– mustaqillik va avtonomiya va tashabbuskorlik.

Hamkorlikda o‘qitishning “Birgalikda o‘qiymiz” metodi 1987-yili Minnesot universiteti professorlari D.Jonson, R.Jonsonlar tomonidan ishlab chiqilgan. Sinf o‘quvchilari 3-5 kishidan iborat kichik guruhlarga ajratiladi. Har bir guruh darsda bajarilishi lozim bo‘lgan topshiriqni ma’lum qismini bajaradi. Guruhlar topshiriqlarning to‘liq bajarilish natijasida o‘quv materialining yaxlit o‘zlashtirilishiga erishiladi. Mazkur metodning asosiy prinsiplari: jamoani taqdirlash, o‘quvchilarga individual yondashish, muvaffaqiyatlarga erishish uchun bir xil imkoniyatlarni vujudga keltirish.

Shuningdek, o‘quvchilarning jamoada ishlash ko‘nikmalarini rivojlantirish tamoyillari ham muhim ahamiyatga ega bo‘lib, ular o‘zaro uyg‘unlikda bu jarayonni samarali kechishini kafolatlaydi.

“Kollaborativ o‘rganish” (hamkorlikda o‘rganish) – muammoni hal qilish, topshiriqni bajarish yoki mahsulot yaratish uchun o‘quvchilarning jamoaviy ishini tashkil qilish imkonini beradigan o‘rganish strategiyasi sifatida tushuniladi[20].

N.V.Pavelyevaning fikricha, “kollaborativ texnologiyalar” o‘quvchilar o‘rtasidagi yoki o‘quvchilar va o‘qituvchi o‘rtasidagi yaqin hamkorlik asosida qurilgan yondashuvdir. Jarayon ishtirokchilari ma‘lumotni faol birgalikda qidirish, muhokama qilish va ma’nolarni tushunish orqali bilimga ega bo‘ladilar[21].

Kollaborativ texnologiyalar – bu raqamli vositalar, platformalar va ilovalar majmuasi bo‘lib, ular foydalanuvchilarga birgalikda ish olib borish imkoniyatini yaratadi. Ular yordamida o‘quvchilar nafaqat o‘zaro muloqotda bo‘lishadi, balki birgalikda hujjatlar, taqdimotlar, loyihalar va boshqa turdagi resurslarni yaratish va tahrir qilish imkoniyatiga ega bo‘ladilar. Bu jarayon real vaqt rejimida amalga oshadi, shuning uchun har bir o‘quvchi o‘zining hissasini kiritishi va guruh ishiga faol qo‘shilishi ta‘minlanadi.

Interaktiv o‘yinlar, ilovalar va loyiha asosida ishlash o‘quvchilarga qiziqarli va raqobatbardosh muhit yaratadi. Bunday ilovalar orqali ular ijodiy yechimlar topishga, yangi g‘oyalarni ishlab chiqishga va o‘z salohiyatlarini namoyon etishga rag‘batlantiriladi. Kollaborativ texnologiyalar yordamida o‘quvchilar raqamli resurslardan samarali foydalanishni o‘rganadilar. Bu ularning zamonaviy texnologik bilimlarini oshirishga, onlayn platformalarda ishonchli va xavfsiz ishlashga tayyorlanishlariga hissa qo‘shadi.

Boshlang‘ich sinf o‘quvchilari uchun kollaborativ texnologiyalardan foydalanish jamoada ishlash ko‘nikmalarini rivojlantirishda innovatsion, interaktiv va samarali yondashuvni ta’minlaydi. Bu texnologiyalar orqali o‘quvchilar nafaqat zamonaviy raqamli savodxonlikka ega bo‘ladilar, balki o‘zaro hamkorlik, muloqot va ijodiy yechimlar topish ko‘nikmalarini ham shakllantiradilar. Natijada, ular kelajakda akademik va ijtimoiy sohalarda muvaffaqiyatli hamkorlik qiluvchi, innovatsion fikrlashga ega shaxslar sifatida shakllanib boradilar.

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IMPROVING BREASTFEEDING TECHNIQUE OF YOUNG ATHLETES

Abstract: *This article provides guidelines and suggestions for improving breaststroke swimming technique for young athletes in the initial training phase.*
Keywords: *Breaststroke, training, improvement, speed, explosive power, swimming, amplitude, velocity.*

The constant development of the results of swimming technique in the brass method, the emergence of new records in the world arenas force us to increase the requirements for the training of swimmers and create the need to improve the technique of young swimmers. Training of high-class swimmers capable of setting world records and winning major competitions is carried out in many countries of the world. [1].

At the same time, the increased competition in the world has led to the fact that the achievements of our swimmers in recent years have become less noticeable than in the past. This fact alone indicates that, given the fierce competition, improving swimming speed and technique should be as effective as possible.

The authors (VN Platonov. VB Avdienko, AR Vorontsov, VP Bakhin and others) in the activities of swimmers play an important role in the relationships associated with them [2,3,4]. From this , together necessity speed rights separately of the era person with circles depends .

research purpose . Rice swimming of the technique about , complexes training slab from the exit consists of , 12-14 years old floating son children for example .

the research organization To do Methods . Tasks solution To do for about research methods used :

research problem according to scientific and methodological literature analysis to do . Questionnaire , pedagogical test , pedagogical experience , information mathematician again work methods .

Ush at work research For ages 12-14 swimmers was selected . In the experiment , the city of Tashkent WATER sports according to specialized children and teenagers 20 students studying at the school swimmers participation did and two to the group divided experience (n=10) and control (n=10) . Rice was used swimming technique big one according to training process 3 days , 6 days in volume union increased . From this along with , swimmers 5 days a week general physical preparation with to engage in .

Control grouping swimmers himself according to the TSSIM program training they did , experiment group swimmers and (n=10) 6 weeks for help

complexes things Did the experiment on July 6 . did September 2022 year and February 2023 until .

Swimmers technician and speed to be in a relationship thing level shows 12-14 years old was in swimmers control tests passed , to him about about :

1. 30m dash
2. Starting from the bedside table
3. In the rice method swimming from 25 m sideline pushed
4. Swim 50 m breaststroke from the start .

Experiment our speed designation thing about shows we have determined 12-14 years old experience and control by for . Simple by taken nations recycling mathematical statistics , we have presented them in Table 1 .

Table-1 Primary lake speed designation thing 12-14 years old experience and control by for .

	Groups		t	t	P
Running 30 m, s	NG	5.75±0.90	0.4	2.03	≥ 0.05
	TG	5.63±0.63			
Starting from the bottom	NG	0.77±0.07	0.5	2.03	≥ 0.05
	TG	0.78±0.06			
15 m breaststroke , s	NG	9.96±1.02	0.01	2.03	≥ 0.05
	TG	9.97±1.23			
50 m from the copper start , s	NG	38.66±2.49	0.5	2.03	≥ 0.05
	TG	41.15±2.94			

Note : NG - control group , TG - experience group , , t - Calculated value , P - error because of .

In the table visible It is clear that the research first Stage 12-14 years old breaststroke in swimmers to look out by level two guru between big difference No. This is it . means that both guru thing level one kind in the circumstances .

We are 12-14 years old. son children swimmers copper swimming for about to develop big things production We went out . Experience in the group training copper swimming in the cycle the technique about about for about March 2 per week Water and on land about 3 series in the amount of union increased . Series I will wait 3 minutes. organization did this to the swimmer product at the level recovery by One on Fire 3 series consists of be , comment Rest for 40-60 seconds was . Exercises maximum 6 seconds at speed for union increased , increased then I'm afraid I 'm going to die .

research other and discussion . Speed and the technique develop for us to produce came out and about about from the collection then , 12-14 year old brass method from swimmers repetitive tests tests we spent .

Table 2 shows that , as an experiment , test data obtained in the lakes control and experience guru other about at the level changed We'll see .

Tests	Groups		t	t	P
Running 30 m, s	NG	5.57±0.72	0.5	2.03	≥ 0.05
	TG	5.47±0.52			
Starting from the bottom	NG	0.76±0.08	1.02	2.03	≥ 0.05
	TG	0.72±0.04			
15m breaststroke , s	NG	9.81±0.81	2.1	2.03	≥ 0.05
	TG	9.21±0.93			
50m from the copper start , s	NG	39.37±2.7	2.1	2.03	≥ 0.05
	TG	37.93±1.44			

Note : NG - control group , TG - experience group , , t - Calculated value , P - error because of .

Experience day for that again NG and TG in tests visible changes in the lakes kotta . Final nations marking differences person see .

30 meters running about swimmers required to be rated at NG (good), on in the test report price was received (satisfactory) . NG swimmers one kind the result Nomads . This is what he says. must statistics she is lake according to at differences order size

Starting from the bottom taken statistics lake according to at differences order size NG assistance in 15m breaststroke of the lakes growth for , in difference not specified . TG swimmers lake according to day swimming time improved . Enough the differences they showed .

Control in the group from experience then in the 50- meter breaststroke swimming according to the competition analysis To do nationality development changes Statistics person in projects big difference not found .

Conclusion. The business is over, based on the pedagogical experience of the nation, I am talking about the effectiveness of our complex training sessions using the breaststroke method, the technique and tactics of swimming for 12-14 year old breaststroke swimmers.

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MODERN APPROACHES TO THE PREVENTION OF BOTULISM

Annotation. *This article examines the problem of botulism, a serious and potentially fatal disease caused by the botulinum toxin produced by Clostridium botulinum bacteria. The introduction highlights the conditions conducive to toxin production, common sources of contamination (especially improperly preserved foods), and the mechanisms by which the toxin affects the human body, resulting in paralysis and other severe symptoms. Focusing on the context of the Samarkand region, this article aims to address the challenge of botulism by developing specific recommendations to enhance the knowledge and skills of both medical personnel and the general population, ultimately reducing the incidence of the disease and its associated risks.*

Keywords: *Botulism, clostridium botulinum, botulinum toxin , food preservation, home canning*

Introduction. Botulism is a serious and life-threatening disease caused by a toxin produced by the bacterium Clostridium botulinum. Botulism toxin is produced primarily in anaerobic (oxygen-free) conditions and is caused by eating smoked fish and home-cooked meat, canned vegetables and fruits. Cases of botulism among the population are recorded mainly from November to May, that is, during the period of consumption of home-canned food [1,3].

The bacteria that cause botulism are widespread in nature and survive thanks to their spores. For these spores to enter food and grow, the following conditions are necessary:

- Low-oxygen (anaerobic) environment
- Environment with low acid, sugar or salt content
- Presence of a certain amount of water

The main sources of botulism are improper canning, fermentation or storage processes in the food industry and at home. In addition, improperly canned foods can allow bacteria to produce toxins for a long time, which poses a serious health risk [2].

What happens in the body with botulism:

The incubation period of botulism varies and can last from 2 hours to 5 days, but symptoms of poisoning usually appear within the first 2-6 hours after the bacteria and its waste products enter the body. Botulinum toxin first enters the oral cavity and then the bloodstream. The main part is absorbed in the small intestine, where it releases botulinum toxin and is distributed throughout the body [4,6].

The toxin quickly damages nerve fibers, blocking the transmission of nerve impulses from the brain and spinal cord to muscle tissue. Because of this, the function of muscle fibers decreases or stops completely.

Paralysis affects the eye and swallowing muscles, and then the intercostal muscles and diaphragm. Peristaltic activity of the intestine decreases, the protective activity of leukocytes decreases, the metabolism of red blood cells changes, as a result of which the delivery of oxygen to tissues is significantly impaired [5,7].

The main symptoms of botulism include:

• Dry mouth, vomiting, change in voice, hoarseness, pain when swallowing;

• Diplopia in the eyes, that is, seeing two objects in one place, deterioration of vision, blurring (fog);

• Drooping of the upper eyelid (ptosis), spider veins, dilated pupils, strabismus (squint)

• Lack of facial expressions, pale skin, unsteadiness when walking, loss of balance;

• Symmetrical paralysis of the arms, paralysis of the respiratory muscles (a feeling of tightness in the chest);

• Bloating and pain, diarrhea 3-5 times a day [8].

The main goal of this article is to develop specific recommendations aimed at increasing the knowledge and skills of medical personnel and the population in combating botulism, using the example of the Samarkand region, and to achieve a reduction in the risks associated with botulism.

Case study.

On January 10, 2025, a family of 5 people was admitted to the Samarkand Regional Infectious Diseases Hospital with signs of botulism of varying severity. After examination by a doctor in the emergency room, the patients were hospitalized in the intensive care unit and the intestinal patient department in accordance with the severity of the clinical signs in the patients. The most severe clinical manifestations of the disease were observed in patient F., born in 2009. Upon admission to the hospital, the patient showed signs of respiratory failure. According to the mother, on January 7, the patient ate pickled tomatoes and cucumbers prepared at home without adding vinegar with relatives at an event in honor of the birthday of one of the relatives, and ate these tomatoes again on January 8. The next day, January 9, the patient experienced nausea, pain in the epigastric region, repeated vomiting and myoneurological symptoms: a feeling of constriction and pain in the throat, difficulty swallowing and speaking, decreased pharyngeal reflex, choking. The same clinical picture was observed in other relatives of the patient who consumed the same products, but to varying degrees of severity. They went to the hospital at their place of residence and after examination by a doctor, were urgently taken to the Samarkand Regional Infectious Diseases Hospital by ambulance. During examination in the intensive care unit, the patient's condition was assessed as very serious and the patient was immediately connected to a ventilator. The patient showed signs of ophthalmoplegic syndrome: symmetrical ptosis, fog before the eyes, double vision, as well as signs of muscle weakness, dry

mouth. Feces and vomit were taken from the patient for detection pathogen by bacteriological method, as well as blood, urine, feces for general analysis and additional research methods were carried out. For consultation, doctors were invited: neurologist, surgeon. On January 10, after gastric lavage and cleansing enema, the patient was administered antibotulinum serum in the amount of 25 thousand IU. The patient's condition worsened, antibotulinum serum was administered again, signs of respiratory failure increased and despite the treatment measures taken, the patient had cardiac arrest and biological death was recorded.

The following conclusions can be drawn from this clinical case of botulism:

1. Proper storage and preservation of food:

The most important factor in preventing botulism is proper storage of food. When canning food at home, the following rules should be followed:

• Sterilize food at high temperatures: Botulism spores may be resistant to high temperatures, but heating at 85°C or higher for 5 minutes will kill the spores.

• Avoid storing in glass containers: Plastic bottles, canning jars, and other sealed containers should be thoroughly sterilized.

• Store food in a slightly acidic environment: Low-acid foods (e.g. vegetables, meat) should be acidified with salt or vinegar before canning.

• Educate the public on home canning practices and heat sealed home canned mushrooms and vegetables at 100°C for 30 minutes before consumption (to destroy botulinum toxin).

2. Good Food Practices

Good food production and storage practices are important in preventing botulism.

In particular:

• Bacteria control: Ensure hygienic conditions in food production and use clean and sanitary containers, equipment and products.

• Employee training: Train employees to follow sanitation and hygiene practices when preparing and storing food.

3. Food safety and inspection: Regular testing and inspection of food products is necessary to ensure safety and prevent botulism. This includes:

• Pre-preparation toxin testing: Use advanced diagnostic techniques to determine if foods contain botulinum toxin.

4. Educate consumers:

It is important to educate people about the risks of botulism. Cases of botulism can be reduced by raising awareness of how to store and consume food. Those who want to preserve or ferment food at home should be educated about the proper methods and risks.

In addition, patients with botulism are hospitalized, and anyone who has been in contact with the patient is given a prophylactic injection of antibotulism serums (intramuscularly) types A, B, and E at a dose of 1000-2000 IU (each type) at the center. These people are under medical observation for 10-12 days. Material is taken from suspected food products for bacteriological examination. Dangerous products are withdrawn from consumption.

Conclusion. Botulism is a serious and sometimes fatal disease, and modern approaches to its prevention are critical. Proper storage of food, maintaining sanitary and hygienic standards, checking products, and purchasing from safe sources can help reduce the incidence of botulism. This risk can be further reduced by using advanced technology and raising awareness. Active participation by all parties is necessary to ensure food safety and prevent botulism.

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DEVELOPMENT OF THE GEOURBANISTIC SITUATION OF UZBEKISTAN

Abstract. *This article covers the development of the geourban situation in Uzbekistan during the years of independence, focusing on urbanization policy and geourban processes during this period.*

Keywords: *geourbanization, cities, periods, gross domestic product.*

In general, recent urbanization trends vary across the country and its regions, often with differences in content, quantitative and qualitative characteristics, and geographical landscape.

In 2019, a presidential decree set a goal of increasing the level of urbanization in Uzbekistan to 60% by 2030. In recent years, urbanization has been carried out not intensively, but extensively. In particular, the area of the city of Tashkent has expanded by 40%. In this process, the population of the cities of Samarkand and Namangan is being increased by expanding their area to 1 million. [1]

The development of cities in Uzbekistan during the years of independence has had various characteristics. This past period can be divided into 4 stages:

The crisis period - 1991-1999. In the early years of independence, the process of emigration of Russian-speaking peoples to their homeland was observed. The political, economic, and social changes that took place also had an impact on urbanization. The demographic indicator of urbanization was 40.4 percent in 1991. The natural movement of the general population slowed down, the natural growth of the population in urban areas was 1.5 times lower than in rural areas, which became the second main reason for the decrease in the level of urbanization, that is, the number and share of the urban population decreased due to both natural and migration. The level of urbanization decreased by 0.5-0.6 percent per year. The economic potential of cities decreased sharply. The main reason for this is the collapse of large-scale industrial production, which is the basis for the development of cities. This process especially affected large and large cities. However, despite this, positive changes were also observed in the urban structure of the regions of the republic. In particular, by the time of independence, there were a total of 123 cities and 104 towns. In 1992, 17 towns were formed. They were Zarbdor and Zafarabad (in Jizzakh region), Mirbozor (Samarkand), Dostlik (Syr Darya), Yangi Chinoz (Tashkent region), Nuristan (Kashkadarya), Kazanketken Akshaloq (Republic of

Karakalpakstan). Surkhandarya region, which was lagging behind in urbanization, achieved significant indicators. The network of regional cities expanded to the towns of Angor, Dostlik, Saryk, Hurriyat and Elbayan, which is explained by the development of modern transport and other infrastructure in the region. However, cities and towns such as Gurlan, Khanka, Shavot and Khazorasp in the Khorezm region fell into the category of cities and towns. By 1994, Payariq in Samarkand region, and in 1995, Shafirkan in Bukhara region, were granted city status as district centers.

The period of stagnation of cities. By the 2000s, the country's economy had stopped growing, emigration had decreased, and a state of stagnation had set in. This, of course, also affected cities. Only two towns had emerged until the new urban reforms in 2000-2008. In 2004, the ancient Karmana was separated from the city of Navoi and registered as a town. After the establishment of the town of Elabad in the Kungrad district, no changes were noted in the geography of Uzbekistan's cities. [3] The urban network of Karakalpakstan decreased by two towns in the same year. The satellite towns of Nukus, Kizketkan and Pristansky were merged into its capital. In 2008, the level of urbanisation continued to decline, falling to 35.8 per cent. Although urbanisation is decreasing in quantity, great attention has been paid to its qualitative development, to the improvement, construction and architecture of cities, to the preservation and restoration of their rich historical and cultural heritage. The anniversaries of the cities of Bukhara, Khiva, Termez, Shahrisabz, Karshi, and Margilan were celebrated on an international scale. In particular, in 2007, the 2750th anniversary of the city of Samarkand was widely celebrated. In 2008, the 2200th anniversary of the city of Tashkent was celebrated.

A number of administrative reforms were implemented in the period 2008-2016, which was a period of urban growth. In accordance with the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated March 13, 2009, “On additional measures to improve the administrative-territorial structure of the Republic of Uzbekistan”, the network of cities in our country increased by 965 settlements.

The transformation of villages into towns marked a new stage in the urbanisation of the Republic. In 2008, the urban population was 9.6 million, while in 2009 it increased to 14.3 million, reflecting a 51.7 per cent rise in the level of urbanisation. [3] The highest figure was observed in the Namangan region, at 64.6 per cent, followed by the Fergana region at 58.7 per cent, and the Andijan region at 53.1 per cent. Previously, the Navoi and Tashkent regions of the Republic of Karakalpakstan led in urbanisation, but recently they have been surpassed by the Fergana Valley, known for its large and densely populated areas. The primary reason for this shift is that the Fergana Valley contains many large villages with substantial populations [2].

The period of growth of new cities. As a result of reforms in the country, particularly from 2017 to the present, special attention is given to urbanisation processes. According to data for 2023, 51.0 per cent of the population of the Republic of Uzbekistan will reside in urban areas. Analyses indicate that the overall

urbanisation rate in our country is decreasing. Changes in the level of urbanisation depend on factors such as the specialisation of the regional economy, the development of city-forming industries, the emergence of new urban settlements, natural population growth, and external migration.

In 2016-2023, there will be changes in the level of urbanisation. The most urbanised region in the republic is the Namangan region (64.9%), which increased by 0.5 per cent compared to 2016 due to the expansion of Namangan city. Fergana (56.9%) and Andijan (52.2%, a decrease of 0.2 per cent) also have significantly higher shares of the urban population than the national average. The regions with lower levels of urbanisation compared to the national average include Khorezm, Surkhandarya, Samarkand, and Bukhara regions. From this perspective, the new urban potential of some regions (the Republic of Karakalpakstan, Navoi) does not accurately reflect the real situation. During the new economic conditions from 2016 to 2023, structural changes in cities are due to the expansion and enlargement of their territories.

The largest number of cities still belongs to the Fergana region (423), which accounts for 35.1% of the urban settlements of Uzbekistan. The Southern, Zarafshan and Tashkent economic regions are also relatively well-supplied with the number of cities. At the same time, the Lower Amu Darya and Mirzachul regions, whose economies have an agro-industrial orientation, have a poorly developed urban network. Since the republic's economy is mainly specialised in the production of agricultural products and their processing industry, more than 4/5 of the cities are small towns.

Table 1

Share of cities of the republic by category

№	City type	Amount	Share of total cities %	Share in population %
1	Millionaire cities	1	0,8	15,4
2	Large cities	7	6.7	17.5
3	Big cities	11	8,3	9,2
4	Medium cities	22	20	9,6
5	Small cities	89	64,2	10,9
	Total	**120**	**100**	**62,6**
6	Towns	1067	89%	37,4
	Total	**1187**	**100**	**100**

The table was compiled by the author based on statistical data.

In 2023, there will be 1,091 small cities and towns, which is 90.1% of the total urban population. The number of medium-sized cities will be 20, 1.6% of the total urban population. The number of large cities in the republic is 7 (Samarkand, Namangan, Andijan, Karshi, Nukus, Bukhara, Fergana), 11 large cities, 22 "medium" cities, and 89 small towns [4].

If in the previous stage (until 2009) the Republic of Karakalpakstan, Navoi and Tashkent regions were the leaders in terms of urbanisation, in the recent period they have been replaced by the densely populated Fergana Valley. The main reason

for this is that the Fergana Valley has a large population of people living in large villages, and they have been given the status of cities [5].

The above analysis shows that in Uzbekistan, the development of cities in geourban processes is mainly due to structural changes, expansion of their territories, and partly through internal migration. The share of cities in the level of urbanisation should be high. The number of cities in our country has remained almost unchanged in recent years. However, among the towns, there are several towns with more than 7 thousand inhabitants according to the Urban Planning Code. 78 of them also perform the function of district centres. Since 42 of these 78 towns are considered non-agricultural in terms of industrial production and population employment, it is appropriate to grant the status of a city to these towns [6].

But at the same time, some problems of urban development are being faced. In particular:

-The rate of increase in the number of cities in our country has remained almost unchanged since independence.

-Uzbekistan ranks 154th among the countries of the world in terms of urban population, and the share of urban population is 51.0%.

-The proportion of urban population is due to the fact that many small cities and towns were formed by administrative decisions, which do not meet the requirements of urban planning.

-In recent years, cities have been increasing their population mainly extensively, that is, by changing the area and boundaries of the city.

-Urbanisation in the country is developing mainly in the form of "false urbanisation".

As can be seen from the above, circumstances negatively affect the development of our country's cities. To eliminate these circumstances, it is necessary to study the development of cities from economic and geographical perspectives.

The Republic of Uzbekistan ranks 154th out of 203 countries in the world in terms of urbanisation level, indicating that the urbanisation index of the Republic of Uzbekistan lags significantly behind that of other countries.

In geourban processes, the development of cities in Uzbekistan mainly results from structural changes, territorial expansion, and, to some extent, internal migration. The share of cities in the urbanisation scale should be substantial, yet the number of cities in our country has remained almost unchanged in recent years. However, among the towns, there are 194 with a population exceeding 7 thousand, according to the Urban Planning Code. Of these, 78 also serve as district centres. Among these 78 towns, 42 are considered urban based on the volume of industrial production and the level of employment, with the majority of the population engaged in non-agricultural activities. This will contribute to an increase in the number of towns.

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WAYS OF USING MODERN EDUCATIONAL TOOLS IN GEOGRAPHY EDUCATION

Abstract. *In modern times, geography is not limited to the study of maps and atlases; rather, it is a subject intimately connected with various disciplines, necessitating the extensive use of modern technologies to enhance the learning process, making it both interesting and effective. This article analyses the importance of utilising contemporary educational tools and methods in geography lessons.*

Keywords: *Geography, education, teaching, interactive, interactive games, knowledge, skills, competence.*

Modern technologies play a crucial role in geography education. In this context, students develop key characteristics such as visualisation and interactivity. Specifically, visualization simplifies the understanding of complex geographical concepts through the use of interactive maps, 3D models, and videos. In terms of interactivity, students can actively engage in the learning process by analysing data, conducting virtual experiments, and communicating with their peers. The Internet offers access to the latest geographical information, enabling students to explore contemporary issues and trends. Additionally, engaging and interactive tasks enhance student interest and make the learning process more effective.

The use of digital tools in geography education is currently regarded as one of the most popular areas. This facilitates the creation and analysis of maps using geographic information systems, modeling various geographical processes, and addressing practical problems. For instance, one can develop an air pollution map for their city using data from weather stations and ascertain the current, past, and future conditions of the agricultural sector based on agro-climatic information from hydrometeorological stations.

Virtual tours: They allow you to visit different places in the world without leaving the classroom. For example, consider a virtual tour of the historic center of Rome. In this case, students develop knowledge and skills on the subject by viewing pictures or videos of a virtual tour of Rome. At the same time, it is possible to embark on a virtual trip to different corners of the world through various platforms on the Internet. This helps to foster a geographical imagination in students.

Table 1.

Modern Educational Tools and their applications in Geography Education

Tool	Application in Geography	Benefits
Geographic Information Systems (GIS)	Mapping land use, population distribution, climate patte	Enhances spatial thinking and data analysis
Interactive Whiteboards	Displaying dynamic maps, virtual field trips	Increases engagement and interactivity
Online Simulation Platforms	Earthquake modeling, climate change simulations	Provides experiential learning
Augmented Reality (AR) Apps	Visualizing topography, historical landscapes	Offers immersive and hands-on learning
Remote Sensing Imagery	Analyzing satellite data for urban growth or deforestatio	Develops analytical skills with real-world data
Virtual Learning Environments (e.g., Moodle)	Delivering quizzes, assignments, and interactive geogra	Supports self-paced, continuous learning

Mobile applications: These allow students to access geographic information anytime and anywhere. For example, they can be used to determine locations using GPS and study the environment. Additionally, they facilitate the organisation of group projects, the exchange of information, and discussions on geographical topics. For instance: Create a group on a social network to discuss the environmental problems of the region.

Interactive boards: They enable you to create interactive presentations, conduct quizzes, and complete group tasks. For example: create an interactive world map showing various geographical features. Video hosting sites such as YouTube offer many videos about geographical processes, natural phenomena, and the nature and culture of countries, and incorporating them into the classroom can yield positive results.

The effective aspects of using digital technologies in geography by students are the combination of traditional and modern methods. Modern technologies should not replace traditional teaching methods, but rather complement them. In an individual approach, it is necessary to take into account the age, level of knowledge and interests of students when choosing tools and tasks. At the same time, it is necessary to constantly update knowledge and form knowledge and skills by following new developments in the field of educational technologies.

There are various ways to use Internet information in geography lessons, this method allows students and students to use online maps. You can find geographical objects, measure distances, and determine directions through online maps such as Google Maps, Yandex Maps.

For students and students to better master the subject, we can give examples of tasks that can be performed using digital technologies, such as creating interactive information within the subject. In particular:

1. Create a presentation about your country or city.
2. Create a travel itinerary using online services.
3. Analyse data on climate change in the region.
4. Create a video about natural phenomena.

In conclusion, the use of digital technologies in geography opens up wide opportunities for improving the quality of education. However, for the successful implementation of such an approach, it is necessary to carry out systematic work on the technical equipment of schools, the training of teachers, and the creation of appropriate educational materials.

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THE IMPORTANCE OF EFFICIENT AND PRODUCTIVE USE OF LAND RESOURCES

Abstrart*: This article describes the use of land as the main means of production in agriculture, as a means of production-base (space) on non-agricultural lands (population settlements, other places where industrial centers are located), and how landowners and specialists should know how to use plan-cartographic, land-planning and land cadastral materials to easily use various measures for land development, land reclamation, land improvement, and land cadastre materials in solving issues related to the development of agriculture.*
Key words: *land resources, land balance, land management organizations, cadastral services, agricultural land category, land owners, means of production*

In his Address to the Oliy Majlis, the President of the Republic of Uzbekistan, Shavkat Mirziyoyev, paid special attention to reforming the agricultural management system and introducing advanced technologies for the rational use of land and water resources. He also emphasized the importance of using water-saving irrigation technologies and issued relevant instructions in this regard [2].

In addition, during a meeting chaired by the President on November 21, 2023, tasks were set concerning the rational use of land resources, land accounting, and improving the quality of cadastral services.

It was noted that economic growth in the regions, food security, job creation, and investment inflow primarily depend on land resources. Over the past three years, due to digitalization, 40 million hectares—or 90% of all land—have been registered in the state cadastre.

At the same time, it was reported that 44.8 million hectares of land and 8.3 million buildings and structures have not yet been given a market valuation as property. Currently, the conditional cadastral value of existing buildings and structures is estimated at 70 billion USD, while their actual market value is believed to be at least 4–5 times higher. If the market value of the land is also included, this forms a substantial "economic asset." The use of modern aerial photography equipment and drones in the sector has led to the identification of many untapped reserves.

Currently, 817,000 hectares of land have been transformed into residential areas and industrial zones. However, in reports, these lands are still classified as agricultural land, and instructions have been given to the Cadastral Agency and local authorities to resolve these ambiguities and accurately reflect the "land balance" in reports [12].

The essence of state land management and geodesy work lies in organizing the efficient use of the country’s land resources, enhancing agricultural practices,

and protecting the land. Land is used in various sectors of the economy for different purposes.

In agriculture, land is used as the primary means of production, while in non-agricultural zones (such as residential areas and industrial centers), land is used as a basis (location) for production.

In the process of deepening economic reforms in agriculture, a number of measures have been established and are being implemented in the Republic of Uzbekistan regarding the rational and efficient use of land, entrepreneurship, and the privatization and transfer of state-owned property.

Given the limited availability of irrigated agricultural land and the varying ecological conditions, it is necessary to use land effectively and efficiently across industries, agriculture, and other sectors of the national economy.

Land management includes the implementation of measures aimed at the use and protection of land designated for agricultural and non-agricultural purposes [4].

The organization of land use is carried out by land management organizations at the expense of state funds. To ensure efficient and productive use of land plots, land management projects related to land use, improvement, and protection are developed by landowners, land users, and interested enterprises, as well as by land management organizations.

When organizing efficient and effective land use, taking into account natural factors and the characteristics of the land is of great importance. Information about the quantity, quality, and characteristics of the land is obtained through the land cadastre.

In solving issues related to the development of agriculture, landowners and specialists must constantly have access to information on land, land management, reclamation, and measures to improve land conditions. They should be familiar with the use of planning and cartographic materials, land management, and land cadastre data to easily access and utilize them.

Land is used in various sectors of the national economy for different purposes. In agriculture, land is used as the primary means of production to supply the population with food and the industry with raw materials. For residential areas (villages, cities), industrial centers, and social and cultural constructions, land is used as a construction site or location.

Land in agriculture is of great importance as the primary means of production. Through human labor, it provides food for the population, fodder for livestock, and raw materials for industry.

In crop production, the yield largely depends on the soil conditions and natural factors. At the same time, increasing fertility and cultivating the land are related to labor activities, such as plowing, leveling, irrigation, drainage, etc.

Thus, land plays the role of a production tool in the production process. Additionally, irrigation systems and drainage networks on land are also considered means of production.

According to the Constitution of the Republic of Uzbekistan, all land within the country is state property. It is allocated for use in various sectors of the national economy.

Pasture lands can be classified according to their degree of dryness and swampiness. In terms of location, they are divided into lowlands (valleys) and mountainous areas. The pastures in the mountainous systems are called highland pastures. They are also categorized by season: autumn, summer, winter, and spring.

Pastures that have undergone organizational, agronomic, and reclamation measures are referred to as cultivated pastures or hayfields. These include lands that have been plowed and hayfields. The value of land is often determined by their area and the intensity of their use.

Some lands that are not included in the category of agricultural land also play an important role in the life of society.

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TAJRIBADA LIMFA OQIMI QIYINLASHGANDA INGICHKA ICHAKNING LIMFATIK TOMIRLARIDA MORFOLOGIK O`ZGARISHLAR

Rezyume: *Maqolaning ma`zmuni tajribada itlarning ko`krak limfa yo`li turli joylardan va ingichka ichak tutqichidagi limfa tugunining yirik va mayda efferent limfa tomirlarini bir vaqtda bog`lash ichakning tashqi limfa tomirlari holatiga sezilarli ta`sir ko`rsatadi. Bu o'tkazuvchi limfa tomirlarining soni va diametrining ko'payishi, limfa tomirlari devorlarining qalinlashishi va zichlashishi, shuningdek, ingichka ichak devorining qalinlashishi. Ba'zi hollarda ingichka ichak shilliq qavatida mayda nuqta shaklidagi qon ketishlar va yaralar kuzatiladi.*

Kalit so'zlar: *tajriba, it, ingichka ichak, ko`krak limfa yo`li, limfatik tugunlar, limfatik tomirlar, qorin bo'shlig'i, kichik tomirlar, mezenterial tugun.*

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MORPHOLOGICAL CHANGES IN THE LYMPHATIC VESSELS OF THE SMALL INTESTINE IN THE DIFFICULTY OF LYMPHATIC OUTFLOW IN THE EXPERIMENT

Abstract: *The article studies in the experiment the simultaneous ligation of large and small efferent lymphatic vessels from different parts of the thoracic lymphatic tract of dogs and the lymph node of the mesentery of the small intestine has a significant effect on the state of extraintestinal lymphatic vessels. This is an increase in the number and diameter of conducting lymphatic vessels, thickening and compaction of the walls of the lymphatic vessels, as well as thickening of the wall of the small intestine. In some cases, small point hemorrhages and ulcers are observed on the mucous membrane of the small intestine.*

Key words: *experiment, dog, small intestine, thoracic lymphatic system, lymph nodes, lymphatic vessels, abdominal cavity, small vessels, mesenteric node.*

Kirish. Ingichka ichakda oziq moddalarning so'rilishining asosiy yo'llaridan biri ichki a'zo limfa tizimidir. Odamlarning ingichka ichagining tutqichida

joylashgan a'zodan tashqari mayda tomirlari shilliq osti qavatining olib keluvchi limfa tomirlari va seroz qavatning olib keluvchi limfa tomirlaridan hosil bo'ladi [1]. Ular ingichka ichakning tutqich qirrasidan tutqich ildizining asosiy limfa tugunlariga qon tomirlari bilan birga yoki ulardan alohida yo'naladi [2,3].

Tadqiqot maqsadi. Tajribada limfa oqimi qiyinlashganda ingichka ichakning limfatik tomirlarida morfologik o`zgarishlarni o`rganish.

Tadqiqot materiallari va usullari. Tadqiqot 23 ta itlarda olib borildi. Shundan 3 tasi nazorat guruhi edi. Tajriba hayvonlarida limfa oqimini qiyinlashtirish maqsadida 4 seriya tajribalar o'tkazildi.Tajriba narkoz ta`sirida olib borildi. Tajribaning birinchi seriyasida 5 ta itda ko'krak limfa yo'li bo'yin sohasida, chap venoz burchakka qo'shilish joyida bog'lab qo'yildi. Tajribaning ikkinchi seriyasida 5 ta itda kranial tutqich arteriyasi boshida ichak tanasi bog'lab qo'yildi. Tajribaning uchinchi seriyasida 5 ta itda 2 ta operatsiya o'tkazildi: avval ko'krak limfa yo'li bo'yin sohasida bog'lab qo'yildi, undan keyin 4, 5, 7, 10 va 15 kun o'tgach ikkinchi operatsiya o'tkazildi - kranial tutqich tugunining efferent limfa tomirlari bog'lab qo'yildi. Tajribaning to'rtinchi seriyasida 5 ta itda kranial tutqich tugunining afferent limfa tomirlari tugunga qo'shilish joyida bog'lab qo'yildi. Tajriba hayvonlari operatsiyadan keyin 1, 3, 5, 7, 10 va 15 kundan so'ng o`ldirildi.

Tadqiqot natijalari. O'tkazilgan tadqiqot natijasida 1 seriyadagi 5 ta it va 3 seriyadagi 5 ta itda operatsiyadan keyin 2-7 kun ichida ingichka ichak devorida ham, uning tutqichida ham kengaygan (1,5-2 barobar) mayda tomirlari aniq ko'rindi. So'nggi tomirlarning soni normaga nisbatan och va yonbosh ichaklarda sezilarli darajada oshgan, bu esa rezerv limfa tomirlarining kengayishi hisobiga yuzaga kelgan. Ingichka ichakning uzunligi bo'ylab seroz qavatning limfa tomirlari tarmog'i aniq ko'rinadi, ularning halqalari turli shaklda ichakning uzunligiga deyarli ko'ndalang joylashgan

I seriya tajribalari: Operatsiyadan keyin 8-15 kun o'tgach, ushbu seriyadagi boshqa itlarda ingichka ichak va uning tutqichining a'zodan tashqari limfa tomirlarining holati yuqorida tavsiflangan holatga o'xshash edi. Kranial tutqich tugunining efferent limfa tomirlari ko'p edi.

II seriya tajribalari: 3 ta itda ichak devorining to'liq bo'lmagan bog'lanishi amalga oshirildi, chunki qo'shimcha ichak tanalari sezilmay qolgan. Shuning uchun ham ushbu hayvonlarda operatsiyadan keyin 7, 10, 15 kundan so'ng ingichka ichak devori va uning tutqichining limfa tomirlari tomonidan ko'rinadigan morfologik o'zgarishlar aniqlanmadi. Operatsiyadan 5 kun o'tgach ingichka ichak devorining limfa tomirlariga Gerota massasi yuborilganda, uning tutqichining limfa tomirlarining to'liq bo'lmagan holda to'lishi kuzatildi. Kranial tutqich tugunining efferent limfa tomirlari bir tutam shaklida kranial yo'nalishda joylashgan va bevosita sisternaga tushgan yoki oshqozon osti bezi-o'n ikki barmoqli ichak tugunidan o'tgan.

III seriya tajribalar: Ushbu seriya tadqiqotining vazifasi 1-seriyadagi 5 ta itda ingichka ichakning organ tashqarisidagi limfa tomirlarining holatini yanada o'rganishdan iborat edi, ularda dastlab bo'yindagi ko'krak limfa yo'li bog'langan, 4, 5, 10, 15 kundan keyin esa kranial tutqich tugunining efferent limfa tomirlari

bog'langan. Operatsiyadan 5-7 kun o'tgach, ingichka ichak devorining ham, uning tutqichining ham limfa tomirlarining keskin to'lib ketishi, deformatsiyasi, egri-bugriligi va sonining ko'payishi, ichak devorining biroz zichlashishi va qalinlashishi kuzatildi. Obliteratsiya qilingan ichak tanalari yaqinida kranial tutqich limfa tugunining mayda va yirik efferent limfa tomirlari massasi topilgan, ular ba'zi joylarda keskin kengaygan va bir-biri bilan birlashib, orqa qorin devorida chigal hosil qilgan, bu tugundan qisman kompensator limfa oqimini ta'minlagan

IV seriya tajribalar: Ushbu seriyaning 5 ta holatda kranial tutqich limfa tugunining afferent limfa tomirlari ularning tugunga tushadigan joyida, uning o'ng va chap yarimlarida bog'langan. Ichakning tutqich chetining kengaygan limfa tomirlari arkadalari tutqichning qo'shni qon tomir-nerv to'plamlarining limfa tomirlarini birlashtirgan. Devorning qalinlashishi va limfa tomirlarining bo'shlig'i kamayishi bilan ular teginish uchun zich, egri-bugri edi. Ushbu hayvonlarda ingichka ichak devori shishgan va zichlashgan. Tadqiqot natijasida ko'krak limfa yo'lini uning chap venoz burchakka tushish joyida bog'lash limfa oqimining holatiga turlicha ta'sir qilishi aniqlandi. 3 ta itlarda ko'krak limfa yo'lining o'ng venoz burchakka tushadigan limfa tomirlari bilan keng aloqasi topildi.

Ko'krak limfa yo'li va o'ng venoz burchakning limfa tomirlari o'rtasida ko'rinadigan aloqalarni aniqlashning iloji bo'lmagan boshqa hayvonlarda limfa oqimining turli darajada qiyinlashishi kuzatildi. Shu bilan birga, qo'shimcha limfa oqimi (qon tomirlarini kuzatib boradigan kichik limfa tomirlarining kompensator kengayishi) aniq aniqlandi. Bitta yirik efferent limfa tomiri bog'langanda, operatsiyadan 7, 10, 15 kun o'tgach tutqichning limfa tomirlarida ko'rinadigan morfologik o'zgarishlar aniqlanmadi.

Xulosa. Katta va mayda efferent limfa tomirlarining kranial mezenterial limfa tugunini bir vaqtning o'zida bog'lash ingichka ichakning organ tashqarisidagi limfa tomirlarining holatiga sezilarli darajada ta'sir qiladi; bu esa limfa tomirlarining soni va diametrining ortishi, limfa tomirlari va ingichka ichakning o'zining devorining zichligi va qalinlashuvi, kranial mezenterial limfa tugunining zichligi va kattalashuvi bilan namoyon bo'ladi. Ingichka ichakning va uning mezenteriyasining organ tashqarisidagi limfa tomirlarida shunga o'xshash o'zgarishlar limfa tomirlari va limfa tugunlarining malign o'smalar hujayralari bilan blokadasida, shuningdek boshqa kasallik jarayonlarida ham yuz berishi mumkin.

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JIGARDA NEURODISTROFIK JARAYONLARDA SEKRETOR FAOLIYATNING SITOMORFOLOGIK TAHLILI

Rezyume: *Maqolada turli xil denervatsiya turlarida jigarda yuzaga keladigan to'qima o'zgarishlarining differentsial tahlili o'rganilgan. Denervatsiya qilingan jigarning sekretsiya faolligini o'rganish uchun sog`lom va tajriba hayvonlari har doim bir xil vaqtda – ertalab soat 9-10 larda, oldindan 24 soat och qolishdan keyin narkoz ta`sirida o`ldirildi. Jigarning denervatsiyasi faqatgina nerv impul'satsiyasining jigar parenximasiga ta'sirini cheklab, gepatotsitlarning butun sekretsiya faolligini buzadi.*

Kalit so'zlar: *mushuklar, jigar, denervatsiya, gepatotsitlar, nervlarni kesish, tajriba, biliar qutb, safro kislotalari, Gol'ji apparati.*

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CYTOMORPHOLOGICAL ANALYSIS OF SECRETORY ACTIVITY IN NEURODYSTROPHIC PROCESSES IN THE LIVER

Abstract: *The article studies the differential analysis of tissue changes in the liver that occur in it with various types of denervation. To study the secretory activity of the denervated liver, experimental and intact animals were always killed at the same time of day - at 9-10 am, after a preliminary 24-hour fast. Denervation of the liver only limits the regulatory effect of nerve impulses on the liver parenchyma, causing a disorder of the entire secretory activity of hepatocytes.*

Key words: *cats, liver, denervation, hepatocytes, nerve transection, experiment, biliary pole, bile acids, Golgi apparatus.*

Kirish. Yaxlit organizmda bez hujayrasi yaxlitning bir qismi sifatida namoyon bo'ladi. Shu bilan birga, bez hujayrasi, har qanday somatik hujayra kabi, o'zining integral tizimi hisoblanadi, ya'ni u o'z elementlaridan birortasi bo'lmasa rivojlana, faoliyat ko'rsata va o'zini takrorlay olmaydi [2,3]. Hujayra ichidagi tartibga soluvchi tizimlarni markaziy boshqarish mexanizmlarini aniqlash katta

nazariy va amaliy ahamiyatga ega va faning zamonaviy bosqichida dolzarb hisoblanadi [1,4].

Afferent yoki efferent refleks yoyining qismlarini o'chirish bezlarning strukturaviy-funktsional tashkil etilishida ularning ahamiyatini aniqlash uchun mumkin bo'lgan usullardan biri bo'lishi mumkin [5].

Tadqiqot maqsadi. Ushbu ishda jigarda neurodistrofik jarayonlarda sekretor faoliyatning sitomorfologik tahlil qilib o`rganish.

Tadqiqot materiallari va usullari. Ishda eksperimental hayvonlar sifatida uy mushuklarining erkaklari tanlangan. Barcha eksperimental va intakt hayvonlar vivariy sharoitida saqlangan va oddiy aralash parxezda saqlangan. Operatsiya aralashuvidan so'ng, eksperimental hayvonlar har doim ertalab soat 9-10 da, oldindan 24 soatlik ochlikdan keyin turli muddatlarda - 1 haftadan 6 oygacha mudatdan keyin narkoz ta`sirida o`ldirilgan. Nazorat operatsiyalarida orqa miya kanali yoki qorin bo'shlig'i keyinchalik nervlarni kesmasdan yoki nerv tugunlarini olib tashlamasdan ochilgan. Intakt hayvonlarning gepatotsitlarining sekretor faoliyati ovqatlantirilgandan keyin va kunning turli vaqtlarida o'rganilgan. Hammasi bo'lib 20 ta operatsiya qilingan va 10 ga yaqin intakt hayvonlar tekshirildi. Intakt va operatsiya qilingan hayvonlardan olingan organ bo'laklari sitologik, gistokimyoviy va biokimyoviy usullar yordamida o'rganildi.

Tadqiqot natijalari. Jigarning ovqat hazm qilish bezidagi faoliyati gepatotsitlarning biliar qutbi orqali o'n ikki barmoqli ichak bo'shlig'iga safro kislotalari, gidroksidi fosfataza va oz miqdorda boshqa fermentlarni chiqarish orqali amalga oshiriladi. Ularning qon tomir qutbi orqali dastlabki moddalar qondan hujayralarga kiradi va tayyor sekretor mahsulotlar qayta qonga chiqariladi. Aynan jigarning ushbu qismida qon aylanish tizimi va gepatotsitning qon tomir qutbi o'rtasida murakkab strukturaviy-funktsional munosabatlar yaratiladi. Bizning ma'lumotlarimiz shuni ko'rsatadiki, hujayra organoidlari safro kislotalari sekretsiyasida ishtirok etadi. Biokimyoviy ma'lumotlarga ko'ra, mitoxondriyalarning strukturaviy o'zgarishlari va ularning hujayrada safro kislotalari sekretsiyasining turli bosqichlarida harakatlanishi mitoxondriyalar nafaqat safro hosil bo'lishining bioenergetikasini ta'minlaydi, balki safro kislotalari sekretsiyasida ham ishtirok etadi. Intakt hayvonlarda kunning bir vaqtlarida jigar bo'laklaridagi hujayralarning aksariyati sekretor granulalar bilan to'ldirilgan (safro kislotalarini to'plash bosqichi). Aralash denervatsiya (quyosh chigalining tugunlarini olib tashlash yoki adashgan nervlarni kesish) bilan jigarning sekretor faoliyatidagi buzilish darajasi uning denervatsiya darajasiga bog'liq. Bizning tajribalarimizda jigarning eng keng denervatsiyasi quyosh chigalining yarim oy tugunlarini olib tashlagandan yoki bir vaqtning o'zida quyosh va yuqori mezenterik chigal tugunlarini olib tashlash va diafragma ostida ikkala adashgan nervni kesishdan so'ng erishildi. Shuni ta'kidlash kerakki, aralash denervatsiya bilan jigarning tomirlari sezgir va harakatlantiruvchi munosabatlarda denervatsiya qilinadi, bu esa tabiiy ravishda organ ichidagi qon aylanishining buzilishiga olib keladi. Garchi aralash denervatsiya paytida jigarda qon tomir buzilishlari bo'lishiga qaramay, glikogenning to'liq yo'qolishi hech qachon kuzatilmaydi, garchi uning

miqdori odatda kamayadi. Jigar deafferentatsiya qilinganda esa, jigar hujayralari glikogen bilan to'yinish qobiliyatini butunlay yo'qotadi. Aralash denervatsiya paytida jigarda, yuqorida aytib o'tilganidek, organning toza deafferentatsiyasiga qaraganda kengroq nekrotik o'choqlar paydo bo'ladi. Saqlanib qolgan parenxima qismlarida ba'zi hujayralarda sekretor faoliyat saqlanib qoladi, boshqa gepatotsitlarda esa sekretor jarayonning buzilishi belgilari aniqlanadi. Shu bilan birga, hujayra organoidlari tuzilishida o'zgarishlar kuzatiladi. Golji apparati kuchli gipertrofiyalanadi. Qon plazmasi oqsillarini (albumin va globulinlarni) qog'oz elektroforezi yordamida biokimyoviy tekshirish shuni ko'rsatdiki, jigar denervatsiyasidan 2 hafta o'tgach, qon zardobida umumiy oqsilning keskin kamayishi asosan albuminlar fraksiyasining kamayishi hisobiga sodir bo'ladi. Jigar aralash denervatsiyasidan 5 oy o'tgach, qon zardobida turli oqsil fraktsiyalari miqdorining normallashish tendentsiyasi kuzatildi. Shunday qilib, ushbu maqolada keltirilgan eksperimental materialdan kelib chiqadiki, bizning tajribalarimizda o'tkazilgan, hatto jigar parenximasiga asab impulslarining tartibga soluvchi ta'sirini cheklovchi qisman denervatsiya ham gepatotsitlarning butun sekretor faoliyatining buzilishiga olib keladi. Bizning tajribalarimizda gepatotsitlarning sekretor faoliyatiga toza jigar deafferentatsiyasining ta'siri uning aralash denervatsiyasidan aniq ajratiladi. Oxirgi holda, tomirlarning to'liq denervatsiyasi natijasida kuchayib borayotgan qon tomir-tsirkulyator buzilishlari denervatsiya o'zgarishlarining umumiy manzarasiga qo'shiladi. Denervatsiya qilingan gepatotsitlarning sekretor faoliyatiga ta'sir etuvchi omillarning murakkab bog'lanishini tushunish uchun jigar denervatsiyasi paytida yuzaga keladigan asosiy o'zgarishlarni qisqacha ko'rib chiqamiz. Jigar deafferentatsiyasiga bizning tajribalarimizda orqa miya tugunlarini olib tashlash orqali erishildi. Och qolgan intakt hayvonlarda glyukoza jigarda glyukokinaza fermentining sintezini qo'zg'atdi, denervatsiya qilingan jigari bo'lgan och qolgan hayvonlarda esa glyukoza ushbu ferment faolligining pasaygan darajasiga ta'sir qilmadi. Ochlik normal jigarda glyukoza-6-fosfataza sintezini qo'zg'atadi, lekin denervatsiya qilingan jigarda xuddi shunday ta'sirga olib kelmaydi. Boshqa tomondan, insulinni kiritish diabetik organizmda jigarda glyukokinaza sintezini tiklaydi, ammo insulinni qonga kiritish jigar denervatsiya qilinganda unda glyukokinaza fermenti faolligining pasaygan darajasini o'zgartirmaydi. Bizning tajribalarimizda ko'rdikki, gepatotsitlarning glikogendeponirlash funktsiyasi jigar deafferentatsiyasidan keyin ham 6 oy o'tgach tiklanmaydi. Boshqacha qilib aytganda, sezgir munosabatdagi denervatsiya qilingan gepatotsit ko'plab tashqi omillarning, shu jumladan gormonal omillarning ta'siriga javob berish qobiliyatini yo'qotadi.

Xulosa. Deafferentatsiyaning kechki muddatlarida jigar hujayralarida mitoxondriyalar sonining kamayishi, ba'zi gepatositlarda esa ular butunlay yo'qolishi kuzatiladi. Innervatsiya buzilgan dastlabki muddatlarda (operatsiyadan 2 hafta o'tgach) jigar hujayralarining sekretor granulalar bilan to'lib toshgani ko'zga tashlanadi. Sekretor granulalar shishadi, ko'pincha xiralashgan konturlarga ega bo'ladi. Ba'zan ular yirik fuksinofil konglomeratlarga birlashadi, ular orasida turli o'lchamdagi vakuolalar joylashgan. Jigarning deafferentatsiyasidan 1 oy va 3 oy

o'tgach, hujayralardagi sekretor granulalar va mitoxondriyalar soni sezilarli darajada kamayadi, ba'zi hujayralarda esa ular butunlay yo'qoladi.

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THEORETICAL BASIS OF TEACHING AND WRITING SKILLS IN TEACHING EFL

Annotation:*This study examines the theoretical underpinnings of applying the cluster system to the instruction of English writing skills. It emphasizes the significance of collaborative learning, cognitive processes, and the integration of digital tools in enhancing writing proficiency among upper-level students. By analyzing contributions from both international and Uzbek researchers, the paper proposes a unified pedagogical approach that merges theoretical insights with classroom methodologies.*

Keywords: *teaching EFL, teaching reading, writing skills, cluster system*

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EFLNI O'QITISHDA O'QITISH VA YOZISH KO'NIKMALARINING NAZARIY ASOSLARI

Annotatsiya:*Mazkur tadqiqot ingliz tili yozma ko‘nikmalarini shakllantirishda klaster tizimini qo‘llashning nazariy asoslarini tahlil qiladi. Tadqiqotda hamkorlikda o‘qitish, kognitiv jarayonlar va raqamli texnologiyalar orqali yuqori sinf o‘quvchilarining yozma nutq malakasini rivojlantirish muhimligi ta’kidlanadi. Xalqaro va mahalliy olimlarning ishlari asosida nazariya bilan amaliyotni uyg‘unlashtiruvchi kompleks yondashuv ilgari suriladi.*

Kalit so'zlar: *EFLNI o'rgatish, o'qish, yozish ko'nikmalarini o'rgatish, Klaster tizimi*

Introduction

Reading and writing play a critical role in English language education. Strong reading abilities allow students to understand texts, expand their vocabulary, and acquire background knowledge—key factors for academic achievement. Writing, in turn, involves more than grammar and vocabulary; it requires higher-order thinking skills such as organizing ideas, maintaining coherence, and constructing arguments. Anderson et al. (1985) emphasize that reading is a fundamental life skill, while Flower and Hayes (1981) describe writing as a recursive and cognitively

demanding task. Despite their central importance, both reading and writing remain challenging to teach and learn, particularly for EFL students. In Uzbekistan, ongoing educational reforms and the adoption of modern instructional methods like the cluster system are being used to enhance the teaching of these skills (Tashpulatova, 2023). Mastering reading is essential not only for learning English but also for excelling across all areas of study, as effective text comprehension significantly boosts students' overall academic performance. However, reading is often perceived as a simple task, which leads many to overlook its foundational importance. In reality, the development of reading skills is a complex and gradual process that should begin early in life. Reading denotes the ability to interpret and understand written language. Strong reading skills are crucial for both academic success and lifelong learning. Language immersion, for example, is a widely used bilingual education method in which students take up to 100% of their classes in a second language, leading to greater comprehension and more native-like proficiency.

Methods

This study synthesizes theoretical research and methodological insights from both international and Uzbek scholars. The method includes literature analysis and comparative evaluation of teaching strategies, with special attention to the use of innovative and learner-centered approaches in EFL contexts. Key sources include the works of Hyland (2003), Nation (2009), and Uzbek educators like Yuldoshev (2020) and Ergasheva (2019). Pedagogical techniques such as scaffolding, language immersion, the use of digital tools, and the cluster system are examined in relation to their effects on students' reading comprehension and writing proficiency.Anderson, Hiebert, Scott, and Wilkinson, reading is a basic life skill and a cornerstone for a child's success in school and life. Without strong reading abilities, personal growth and career success opportunities are significantly limited. Despite its importance, reading remains one of the most challenging areas within the educational system, especially as our increasingly technological society demands higher levels of literacy. To benefit from reading materials fully, students must learn to read critically and analytically. Reading involves both visible and invisible layers of meaning. The goal is to uncover the underlying messages or themes of a text. Teele emphasizes that the ultimate aim of all readers should be comprehension. Research has shown that proficient readers actively engage with texts and remain aware of the cognitive processes they use to understand what they read. Teachers can support students' reading comprehension by explicitly teaching reading strategies. Effective instruction in these strategies should involve: naming and explaining each strategy, modeling through think-alouds, guided practice, partner activities, and independent use. Prediction is one of the primary strategies. It allows students to set a purpose for reading and helps them form expectations about the content. Good readers use their prior knowledge to make and adjust predictions as they progress through a text. Strategies to teach prediction include using graphic organizers, post-it notes, analyzing titles or pictures, and comparing actual outcomes to predictions. Visualization involves creating mental images of

scenes, characters, and events. Teachers can encourage students to visualize by asking them to draw what they imagine or describe their mental images. Making connections helps learners relate the text to their personal experiences (text-to-self), other texts (text-to-text), and the broader world (text-to-world). This enhances engagement and deepens comprehension. Activities such as drawing, charting, writing, or using graphic organizers can foster these connections. Summarizing requires readers to identify and express the main ideas of a text in their own words, distinguishing key points from supporting details. This strategy promotes information retention and helps students organize their understanding of longer texts. Questioning encourages students to ask and answer questions before, during, and after reading. This helps construct meaning, solve problems, and explore ideas further. Teachers can guide students to generate questions, distinguishing between factual, inferential, and knowledge-based queries. Inferring—or "reading between the lines"—enables students to draw conclusions based on both textual evidence and prior knowledge. Techniques include analyzing illustrations, graphs, and context clues.

Consistent exposure to English, both formally and informally, enhances reading abilities. Reading newspapers, watching subtitled TV shows or movies, and playing word games like Scrabble or Words with Friends offer engaging ways to expand vocabulary and comprehension. In addition to strategy instruction, several foundational reading techniques should be emphasized: Interpretation: Understanding the meaning of text by linking sounds and letters, often developed through early exposure to rhymes and songs. Fluency: Reading smoothly and confidently, which improves comprehension and is achieved through regular practice. Vocabulary development: A rich vocabulary facilitates quicker and deeper understanding of texts. Word games and daily reading can support vocabulary growth. Sentence formation: While often associated with writing, understanding sentence structure is crucial in reading as it aids in linking ideas and interpreting meaning. Contextual knowledge: Background knowledge of the world supports inference and interpretation. Encouraging learners to connect new information with what they already know is essential. Reading is an intricate process that requires the coordination of multiple skills. When taught effectively, these skills empower students to achieve strong comprehension and academic success.

Writing is one of the most essential and complex language skills. It requires not only mastery of grammar and vocabulary but also the ability to organize ideas, develop arguments, and express thoughts coherently. Writing enables learners to produce language rather than simply receive it, making it an active and productive skill. Unlike speaking, which is often spontaneous and informal, writing is more structured and permanent. Therefore, it demands a higher level of linguistic and cognitive precision.

Results

These strategies help students become active readers and deepen their comprehension. Writing instruction benefits from the process approach, which includes pre-writing, drafting, revising, editing, and publishing. Studies by Uzbek

scholars (e.g., Karimova, 2021; Islomova, 2022) confirm that visual organizers and digital platforms improve learners' writing output and engagement. The cluster system—grouping vocabulary, grammar, and stylistic features by theme—was found to significantly enhance coherence in writing tasks (Tashpulatova, 2023). Furthermore, authentic tasks and feedback mechanisms—both peer and teacher-based—are shown to improve writing fluency and confidence.

In language education, teaching writing skills is fundamental to helping students become effective communicators. Scientific research in this field highlights that writing instruction must go beyond grammar drills and sentence-level exercises. It should focus on developing students' abilities to plan, draft, revise, and edit their work.

One of the most influential frameworks in writing pedagogy is the process approach, which emphasizes writing as a recursive process that includes the following stages:

Pre-writing: Generating ideas, brainstorming, outlining, and planning.

Drafting: Transforming ideas into written form with attention to structure and flow.

Revising: Improving content, organization, and clarity.

Editing: Correcting grammar, spelling, and punctuation.

Publishing: Sharing the final version with others.

This approach contrasts with traditional product-based methods, which focus solely on the final written output rather than the steps taken to reach it. Research has shown that the process approach helps learners develop greater writing fluency, confidence, and independence.

Another important area of scientific research concerns the cognitive aspects of writing. Writing is not just a mechanical act but a problem-solving activity involving working memory, attention, and higher-order thinking. According to Flower and Hayes's cognitive model of writing (1981), skilled writers continually move between planning, translating ideas into text, and reviewing their work. Teaching students how to monitor and reflect on their writing process improves both the quality of their output and their metacognitive awareness. In the context of teaching English as a foreign language (EFL), research emphasizes the need to adapt writing instruction to students' proficiency levels and cultural backgrounds. Beginner learners often benefit from controlled writing tasks such as sentence completion, gap-filling, and short paragraph writing. Intermediate and advanced students, however, should be challenged with more open-ended tasks such as essays, reports, and creative writing, which allow them to develop voice and style.

Moreover, studies stress the value of authentic writing tasks—assignments that reflect real-life communication, such as writing emails, letters, blog posts, and narratives. These tasks increase motivation and provide practical experience. When students see writing as meaningful, they are more likely to invest time and effort in the process.

Research also highlights the importance of feedback in writing instruction. Both teacher and peer feedback contribute to students' development. Effective

feedback should be specific, timely, and focused on both content and form. It should guide learners toward revision rather than simply correcting their mistakes.

Technology-assisted writing instruction is another emerging area of study. Tools such as word processors, grammar-checking software, online dictionaries, and writing platforms like Google Docs have been shown to support the development of writing skills. These tools allow for easier editing, collaboration, and access to language resources.

Discussion

The findings support a comprehensive, learner-centered approach to literacy instruction. Reading strategies must be taught explicitly and integrated into broader language curricula. Writing, on the other hand, should be viewed as a developmental process requiring scaffolding and cognitive engagement. Uzbek research aligns with international trends in advocating for methods that blend theoretical knowledge with practical tools. The successful implementation of digital technologies and cluster-based models illustrates how innovation can improve outcomes in local educational contexts. Therefore, teachers should apply differentiated, research-backed strategies to enhance the effectiveness of literacy instruction in EFL settings.

Teaching writing is not simply about teaching correct grammar or structure—it is about nurturing students' ability to express themselves clearly, creatively, and critically in a second language. By drawing on research-based strategies, educators can design effective writing instruction that fosters both linguistic competence and confidence.

In recent years, Uzbek scientists have actively contributed to the theoretical and practical foundations of teaching English writing skills through innovative pedagogical technologies. For example, Yuldoshev (2020) emphasizes the importance of using student-centered approaches in English language instruction, arguing that methods such as problem-based learning and task-based instruction enhance writing proficiency. Similarly, Ergasheva (2019) explores the effectiveness of scaffolding techniques in improving written output among Uzbek EFL learners, especially in secondary schools. Her work supports the integration of visual organizers, such as mind maps and storyboards, in line with the cluster system, to foster coherence and creativity in writing tasks.

Moreover, Tashpulatova (2023) presents a theoretical model for implementing the cluster system in language education, showing its relevance in developing learners' analytical and writing skills simultaneously. According to her findings, grouping thematic vocabulary, grammar rules, and stylistic features within clusters aids in better retention and practical application during writing activities. Islomova (2022) also highlights that communicative competence, particularly in written form, can be effectively cultivated when learners engage in purposeful writing tasks that reflect real-life contexts.

In addition, Karimova (2021) investigated how digital tools such as online collaborative platforms and interactive writing applications contribute to the improvement of writing skills among upper-class students. Her research showed that learners became more engaged and autonomous when given opportunities to

publish and peer-review their written work online. Furthermore, the integration of cluster-based writing models into online learning environments was found to increase students' motivation and critical thinking. These findings are consistent with Makhkamova's (2010) earlier work, which emphasized the need for innovative methodology in language education. Collectively, these Uzbek scholars underscore the importance of blending theory with practical tools in writing instruction.

These national studies align with global educational trends and demonstrate that Uzbekistan is making significant strides in adapting modern pedagogical innovations to suit local linguistic and cultural contexts.

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INFORMATION STRATEGY AND MANIPULATION TECHNIQUES IN ARMED CONFLICTS

Abstract: *This scientific article analyzes the role and impact of information strategies and manipulation techniques in modern armed conflicts. Information warfare is viewed as an integral element of warfare, employed to influence public opinion, politically and morally weaken the opposing side, and mislead the international community. The research examines widespread fake news and emotion-driven information manipulation, using the Russia-Ukraine and Israel-Palestine conflicts as case studies. The main research question explored is: "What strategies are used in information warfare during modern armed conflicts, and how do they affect information consumers?" Qualitative research methods such as observation and content analysis were applied, as they help reveal how information strategies function as a real force in warfare. The study concludes with recommendations on ensuring information security, promoting media literacy, and developing systematic approaches to counter manipulation.*

Keywords: *information warfare, disinformation, framing, manipulation, strategic communication, Israel-Palestine, Russia-Ukraine conflict*

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QUROLLI TO'QNASHUVLARDA AXBOROT STRATEGIYASI VA MANIPULYATSIYA USULLARI

Annotatsiya: *Ushbu ilmiy maqolada zamonaviy qurolli to'qnashuvlarda axborot strategiyasi va manipulyatsiya usullarining tutgan o'rni va ta'siri tahlil qilinadi. Axborot urushi urushning ajralmas elementi sifatida qaralib, u orqali jamoatchilik fikriga ta'sir o'tkazish, raqib tomonni siyosiy va axloqiy jihatdan zaiflashtirish, xalqaro hamjamiyatni chalg'itish kabi strategik maqsadlar ko'zda tutilishi ko'rsatiladi. Tadqiqot davomida Rossiya-Ukraina va Isroil-Falastin to'qnashuvlari misolida keng tarqalgan yolg'on xabarlar, emotsiyaga asoslangan axborot manipulyatsiyasi kabi holatlar tahlil qilindi. Maqolada "Zamonaviy qurolli mojarolarda axborot urushi qanday strategiyalar orqali olib boriladi va ularning axborot iste'molchisiga ta'siri qanday?" savoliga javob topishga harakat qilingan. Bu jarayonda Sifatiy tadqiqot metodlaridan ya'ni kuzatish va kontent tahlilidan foydalanilgan. Chunki bu metodlar asosida to'plangan ma'lumotlar*

orqali axborot strategiyasining urushdagi real kuch sifatida qanday ishlatilishi ochib beriladi. Tadqiqot yakunida axborot xavfsizligini ta'minlash, media savodxonlikni rivojlantirish va manipulyatsiyalarga qarshi tizimli yondashuvlar taklif etiladi.

Kalit so'zlar: *axborot urushi, dezinformatsiya, framing, manipulyatsiya, strategik kommunikatsiya, Isroil- Falastin, Ukraina-Rossiya urushi*

introduction

Throughout history, armed conflicts have always been fought not only with weapons but also for dominance in the information sphere. In the era of globalization and the internet, this dynamic has taken on an entirely new form, and information strategy has become one of the key factors of military success. Every war takes place on two levels — one on the battlefield and the other in people's minds. For this reason, military information policy and manipulative methods hold a prominent place in modern journalism, political science, and information security studies. An information strategy refers to a communication system designed to influence public opinion during conflicts, strengthen a country's international position, weaken the internal unity of the opposing side, and boost the morale of one's own army and civilians. The war in Ukraine and the ongoing war in the Gaza Strip differ significantly from previous armed conflicts. In both cases, we observe two types of warfare: one on the battlefield and the other in the information domain, conducted with unconventional "weapons." Both conflicts led to an unprecedented spread of disinformation worldwide. In the Gaza war, false information was widely circulated via social media — even major media outlets in various countries broadcasted this content without verification. This was largely due to the rapid development of artificial intelligence, which made it more difficult to determine whether images were genuinely from war zones or fabricated. In addition, the rise of citizen journalism has posed challenges, particularly in terms of verifying the accuracy of the information being shared. (Georgiana, S., 2023)

Although the wars between today's societies are fought on the front line, it can be stated that these wars are carried out at the point of managing perceptions. Information wars are waged not only by the states party to the war but also by those living in other states in order to create a positive or negative perception about the countries participating in the war. The most basic strategy applied in this sense is fake news. (Kazım Babacan., Mehmet Sinan Tam., 2022). Fake news is often built around controversy. Wars, religious and ethnic conflicts, and internal political struggles around the world are frequently driven or exacerbated by false information. For instance, during so-called "color revolutions," opposition groups and third-party actors disseminated fake news via the internet and mass media to expose the "true face" of ruling governments. The conflicts in Ukraine, the civil war in Syria, and the war in Iraq are all rooted in — or have been fueled by — disinformation. The Collins English Dictionary named "fake news" the most used phrase of 2017. (Qosimova. N., 2019) Information manipulation in armed conflicts is not a new phenomenon. It has manifested in various forms for centuries. As noted

by Associate Professor Boybo‘ta Do‘stqoraev in the book “O‘zbekiston jurnalistikasi tarixi” (History of journalism in Uzbekistan), during the Russian Empire’s colonization of Central Asia, ideological manipulation was prominently used in the pages of “Turkestanskiy Vedomosti” (1870). The newspaper’s article dated May 4, 1913, titled K.P. Kaufman – “Founder of Turkestanskiye Vedomosti”, partially quotes how the colonizers used information to legitimize their conquests. Manipulative influence was expressed in the following ways:

- Justifying the colonizers’ expansionist policies;
- Showcasing the military power of the imperial army;
- Boosting the fighting spirit of soldiers;
- Instilling fear in the local population through displays of military might. (A. Safarov., 2023)

This article aims to answer the following questions:

1. What strategies are used in information warfare during modern armed conflicts?

2. How are the roles and effectiveness of information strategies and manipulative techniques assessed in the context of armed confrontations?

METHODOLOGY

This study aims to analyze how information strategies and manipulation techniques are employed during modern armed conflicts. To achieve this, a qualitative analytical approach was adopted. The selected methods serve to identify tools of information manipulation, examine their content and nature, and understand their influence on public consciousness.

1. Document and Content Analysis

2. The primary methods applied in this research were document analysis and content analysis. The following materials were examined:

–Fabricated videos, edited images, and AI-generated visuals disseminated in the context of the Russia–Ukraine and Israel–Hamas conflicts;

–Relevant news and rebuttals issued by official and unofficial news agencies and various international media organizations.

2. Discourse Analysis

To gain a deeper understanding of information manipulation strategies, discourse analysis was employed. This method facilitated a linguistic, semantic, and contextual analysis of selected propaganda messages and widely shared narratives on social media platforms. The research utilized case study analysis based on two major events:

- Disinformation campaigns circulated during the Russia–Ukraine war (2022–2023);
- False news stories and manipulated imagery spread during the Israel–Hamas conflict (2023).

Discussion and results

In the war in Ukraine, a weapon more dangerous than military equipment is being widely used: disinformation, the spread of false information, and propaganda techniques. This was stated by Germany’s Minister of State for Culture and Media,

Claudia Roth, at the Global Media Forum held in Bonn on June 20–21, 2022. The invasion of Ukraine has become a serious test for the media. Journalists working in life-threatening war zones are now expected to distinguish truth from lies, and facts from fabrications. A report by Reporters Without Borders also notes that disinformation and propaganda have intensified significantly in recent times. According to analysts, Russian media greatly increased the dissemination of false information about Ukraine after the invasion began. A few examples of fabricated stories published by Russian outlets include:

• "Kyiv is sending young children to fight,", "Ukraine has developed bulletproof vests for pregnant women", "Ukrainian refugee mothers are selling their newborns in Swiss bunkers", "A concentration camp has been established near Odesa for those unwilling to fight against Russia." These headlines were identified by Ukraine's Stop Fake project. The platform also reports that in the previous year, Russia employed artificial intelligence tools to produce some of these fake stories. In one such video, the commander of the Ukrainian armed forces appears to be calling for a coup, while another shows a conversation allegedly involving President Zelensky's wife.

Researcher Dilshod Ro'ziqulov, in his monograph "Harbiy jurnalistikada axborot integratsiyasining nazariy va amaliy xususiyatlari" (Theoretical and Practical Features of Information Integration in Military Journalism) offers a nuanced perspective. He argues that, at certain stages of the conflict, more fake news was spread from the Ukrainian side than from the Russian side. For example, President Zelensky once stated that soldiers defending Snake Island had been killed and would be posthumously awarded the title of "Hero of Ukraine," yet it was later confirmed that the soldiers were alive and taken prisoner. Furthermore, Ukrainian and Western media were accused of spreading unverified claims that Russia had bombed Ukrainian civilians using military aircraft. The only response from Russian authorities was a brief press conference held by the Ministry of Defense. According to Ro'ziqulov, Russian military journalists should have countered these accusations more effectively—by broadcasting live from military units to present the real situation. From the sources analyzed, the following conclusions can be drawn: In any armed conflict, each side views its own interests as paramount. These kinds of fake news stories mislead information consumers, leading to the emergence of new forms of information manipulation. (Ro'ziqulov, D., 2024)

Key manipulation strategies include:

• Framing – presenting information within a predetermined narrative or angle.

• Visual manipulation – presenting photos or videos out of context to mislead audiences. This technique is particularly prevalent on social media during armed conflicts. Alarmingly, even reputable and trusted news outlets sometimes unknowingly rely on such manipulated visuals. For example, a staged photograph originally taken by a Saudi photographer in 2014 as part of an art project resurfaced online. This time, it was falsely presented as a scene from the war in Gaza. The same image had previously been misattributed as originating from the Syrian war.

In June 2024, a viral post claimed the image showed a child sleeping beside their parents' grave—again, a completely fabricated context.

(Source: Reuters image)

However, the widely circulated image on social media was originally published on January 7, 2014, on the Instagram page of a Saudi Arabian photographer named Aziz Alotaibi. In response to comments under the photo, Alotaibi clarified, "This is a staged image that tells a story about orphanhood." His profile also contains other photos taken in the same location with the same child. In a 2014 interview with journalist Harald Doornbos, Alotaibi explained that the photo was created as part of an art project. The concept was conceived with his nephew, and they traveled to the city of Yanbu in Saudi Arabia, where they constructed grave-like mounds using sand and stones for the shoot.

In Romania, the National Audiovisual Council, which monitors compliance with audiovisual legislation, has targeted three T.V. stations. They provided footage of alleged bombings of the Gaza Strip, and the images used were taken from Platform X. The footage was of fireworks in Algeria after the victory over football team CR Belouizdad. However, members of the National Broadcasting Council have been quite sympathetic to these editorial lapses, issuing simple warnings to those responsible. (Informational War: Analyzing False News in the Israel Conflict (Georgiana, S., 2023)

• Disinformation — the dissemination of false, misleading, or deceptive information — is another major issue in armed conflicts during the era of

globalization. The strategic importance, but also a certain obsession with disinformation, is also confirmed by the statement of former KGB chief Yuri Andropov, who said: “disin-formation has the effect of cocaine, if you sniff it once or twice, it may not change your life. But if you use it every day, it can make you an addict - a different person” In the modern digital technological environment, disinformation are given more media space and power, and the term weaponization of information is used to stress their lethality, penetration, and impact on the targeted population, nation, or society. (Josip Mandić., Darijo Klarić., 2023)

The Gaza hospital explosion and media slippage The timing of the Gaza hospital explosion was a real test of how fake news is distributed (Kahn, G., 2023). Media around the world distributed the message from the Gaza Health Minister that a rocket allegedly fired from Israel hit a Gaza hospital and caused over 500 deaths and injuries. Even though Israel later proved that the rocket that hit the hospital belonged to Islamic Jihad, this news did not matter as the information from the Health Minister had already been spread by Hamas and led to widespread social protests in Turkey or Jordan and later in Europe. This was like a test given to media organisations worldwide, and the results illustrated how easily journalists can be manipulated. So, media outlets published a series of corrections. The New York Times published an editors' note saying their reporting “left readers with an incorrect impression of what was known and how credible the reporting was” (Kahn, G., 2023).

• Selective reporting — the practice of highlighting only one side or selectively presenting either positive or negative facts — is another manipulation technique. For example, during the Israel–Gaza conflict, both parties highlighted their own casualties in the media while demonizing the actions of the opposing side. In armed conflicts, the side that gains informational dominance often secures political advantage. Manipulative strategies are not only aimed at shaping public perception but also serve to legitimize military actions. As such, both journalists and media consumers must develop media literacy to identify and resist such manipulative techniques.

Conclusion

The information space in armed conflicts is now as crucial as the battlefield itself. Through information strategies and manipulation methods, states not only gain military advantages but also achieve political and diplomatic successes. This situation demands a high level of media literacy, critical thinking, and ethical approach from journalists, politicians, and ordinary citizens. Therefore, when we hear about any war, our first focus should be on how it is being “narrated.” The research found that fake news and disinformation campaigns are being planned and disseminated through centralized and networked methods. Particularly, in the context of the Russia-Ukraine war and the Israel-Hamas conflict, such information attacks were carried out on a large scale, creating significant public turmoil and distrust, as demonstrated by examples. The strategy of pressuring users’ emotional consciousness through AI-generated false images, edited videos, and emotion-

driven manipulative narratives was observed. These situations lead to the following conclusions:

1. Information strategy is an integral part of warfare, and accepting it indifferently can lead to serious military and political consequences.

2. Manipulation methods are mainly implemented through emotional, visual, and discursive tools, leading to the distortion of real events.

3. Fact-checking platforms play an important role in preventing fake news, but their effectiveness remains insufficient, especially in the early stages of a conflict.

4. Protecting the information space should be a priority in any state's information security policy.

5. Increasing media literacy can help build immunity against information attacks by developing the ability to recognize false news within the general public.

At the same time, international organizations, mass media, and academic circles need to deeply study the global consequences of information warfare and develop systematic strategies in international cooperation to combat it. Overall, information is the weapon of the new generation. Whoever controls it shapes the interpretation of events and public opinion. Therefore, in the context of military conflicts, not only is there a struggle for weapons, but also for the truth.

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MUSOBAQA OLDI TAYYORGARLIK VAQTIDA MASHG‘ULOTLARNI O‘TKAZISH USULIYATI

Xulosa :*Ushbu maqolada musobaqa oldi tayyorgarlik sportchilarning muvaffaqiyatida muhim bosqich hisoblanadi. Ushbu maqola musobaqa oldi mashg‘ulotlarni tashkil etishning zamonaviy usullarini, ularning sportchilarning jismoniy va psixologik tayyorgarligiga ta’sirini o‘rganadi. Statistik tahlil orqali turli usullarning samaradorligi baholanadi, shuningdek, optimal mashg‘ulot dasturlarini ishlab chiqarish bo‘yicha tavsiyalar beriladi.*

Kalit so‘zlar: *musobaqa oldi tayyorgarlik, mashg‘ulot usuliyati, sportchilar tayyorgarligi, statistik tahlil, psixologik tayyorgarlik.*

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THE COMPETITION TOOK THE OPPORTUNITY TO CONDUCT TRAINING IN PREPARATION TIME

Abstract:*In this article, the pre-competition preparation is an important milestone in the success of athletes. This article took the competition studies modern methods of organizing training, their impact on the physical and psychological training of athletes. Through statistical analysis, the effectiveness of various methods is assessed, as well as recommendations for the production of optimal training programs.*

Keywords: *pre-competition preparation, training equipment, athlete training, statistical analysis, psychological training.*

Kirish. Musobaqa oldi tayyorgarlik sportchilarning eng yuqori natijalarga erishishi uchun muhim bosqichdir. Bu davrda mashg‘ulotlar nafaqat jismoniy holatni yaxshilash, balki psixologik barqarorlikni ta’minlash va strategik ko‘nikmalarni rivojlantirishga qaratiladi. Mashg‘ulotlarni o‘tkazish usuliyati to‘g‘ri tanlanganda, sportchilarning musobaqadagi muvaffaqiyati sezilarli darajada oshadi. Ushbu maqola musobaqa oldi mashg‘ulotlarni tashkil etishning eng samarali usullarini ko‘rib chiqadi va ularning ta’sirini statistik ma’lumotlar asosida tahlil qiladi.

Tadqiqot metodologiyasi va adabiyotlar tahlili. Ushbu tadqiqot musobaqa oldi tayyorgarlik vaqtida mashg‘ulotlarni o‘tkazishning turli usullarining sportchilarning jismoniy va psixologik tayyorgarligiga ta’sirini baholashga qaratilgan. Tadqiqotda eng samarali usullarni aniqlash va ularni optimal tashkil etish bo‘yicha tavsiyalar ishlab chiqish maqsad qilingan. Tadqiqot sifatli va miqdoriy yondashuvlarni birlashtirgan aralash metodologiyaga asoslanadi. Quyidagi usullar qo‘llanildi:

1. **So‘rovnoma**: Sportchilar va murabbiylarning mashg‘ulot usullari haqidagi fikrlarini o‘rganish.
2. **Tajriba**: Turli mashg‘ulot usullarining sportchilarning jismoniy va psixologik holatiga ta’sirini sinovdan o‘tkazish.
3. **Statistik tahlil**: Olingan ma’lumotlarni tahlil qilish va solishtirish uchun SPSS dasturidan foydalanildi.

Tadqiqot 2025-yilda O‘zbekistonning turli sport akademiyalarida o‘tkazildi. Jami 200 nafar sportchi (18-30 yosh, 60% erkak, 40% ayol) va 50 nafar murabbiy ishtirok etdi. Sportchilar turli sport turlari (yengil atletika, suzish, futbol, boks) vakillari sifatida tanlandi.

Ma’lumot yig‘ish usullari: qatnashchilardan ma’lumotlar quyidagi tartibda olindi.

1. **So‘rovnoma**: Standartlashtirilgan so‘rovnomalar sportchilar va murabbiylar orasida tarqatildi. So‘rovnoma mashg‘ulot usullarining samaradorligi, qiyinchiliklari va psixologik ta’siri haqida savollarni o‘z ichiga oldi.
2. **Fiziologik testlar**: Sportchilarning yurak urish tezligi (HR), laktat darajasi va chidamlilik ko‘rsatkichlari o‘lchandi.
3. **Psixologik baholash**: Sportchilarning stress darajasi va motivatsiyasi “Perceived Stress Scale” (PSS) va “Sport Motivation Scale” (SMS) o‘lchovlari yordamida baholandi.
4. **Mushohada**: Mashg‘ulot jarayonlari murabbiylar tomonidan kuzatildi va samaradorlik bo‘yicha baholandi.

Ma’lumotlarni tahlil qilish

- **Sifatli tahlil**: So‘rovnoma javoblaridagi ochiq savollar kontent-tahlil usuli yordamida guruhlandi.
- **Miqdoriy tahlil**: Fiziologik va psixologik ma’lumotlar SPSS dasturida tahlil qilindi. O‘rtacha, dispersiya va korrelyatsiya tahlillari (Pearson korrelyatsiyasi) qo‘llanildi.
- **Solishtirma tahlil**: Turli mashg‘ulot usullarining samaradorligini solishtirish uchun ANOVA testi o‘tkazildi.

Tadqiqot cheklovlari.Tadqiqot faqat O‘zbekistondagi sportchilar bilan cheklangan, shuning uchun natijalar boshqa mamlakatlar uchun umumlashtirilishi mumkin emas.Sportchilarning tajriba darajasi va sport turlari o‘rtasidagi farqlar natijalarga qisman ta’sir ko‘rsatgan bo‘lishi mumkin.Psixologik baholash sub’ektiv javoblarga asoslangan, bu ma’lumotlarning aniqligini cheklashi mumkin.

Adabiyotlar tahlili. Musobaqa oldi tayyorgarlik va mashg‘ulot usullari bo‘yicha adabiyotlar sport fiziologiyasi, psixologiyasi va mashg‘ulot metodologiyasi sohalarini qamrab oladi. Xalqaro manbalar zamonaviy ilmiy yondashuvlarni, mahalliy manbalar esa O‘zbekiston sport tizimidagi amaliy tajribalarni aks ettiradi. Quyida asosiy manbalar va ularning mavzuga hissalari tahlil qilinadi.

1. **Bompa, T. (2020).** ***Periodization: Theory and Methodology of Training*****. 6-nashr. Human Kinetics. Tahlil**: Bompa musobaqa oldi tayyorgarlikni davriy rejalashtirishning ilmiy asoslarini yoritadi. Uning yondashuvi interval va funktsional mashg‘ulotlarni optimal tashkil etishda qo‘llaniladi. Kitob maksimal yuklamalar va tiklanish davrlarini muvozanatlash bo‘yicha amaliy strategiyalarni taqdim etadi. Biroq, psixologik tayyorgarlikka kamroq e’tibor berilgan.Interval mashg‘ulotlarning samaradorligini tushuntirishda asosiy manba sifatida ishlatilgani uning mavzuga qo‘shgan hissasini ko‘rsatadi..

2. **Wilmore, J.H., & Costill, D.L. (2019).** ***Physiology of Sport and Exercise*****. 7-nashr. Champaign, IL: Human Kinetics. Tahlil**: Ushbu kitob organizmning jismoniy yuklamalarga fiziologik javoblarini, ayniqsa laktat chegarasi va yurak-qon tomir tizimi reaktsiyalarini tahlil qiladi. Musobaqa oldi tayyorgarlikda chidamlilikni oshirish usullari batafsil yoritilgan.Mavzuga hissa: Fiziologik testlar uchun asosiy nazariy asos sifatida foydalanildi.

3. **Pelletier, L.G., & Sarrazin, P. (2017). “Motivation in Sport: The Role of Self-Determination Theory”.** ***Journal of Sports Sciences*****, 35(10), 975-984.** Tahlil: Maqola psixologik tayyorgarlikning sportchilar motivatsiyasiga ta’sirini o‘rganadi. O‘z-o‘zini belgilash nazariyasi (Self-Determination Theory) asosida sportchilarning ichki motivatsiyasini oshirish usullari muhokama qilinadi. Mavzuga hissa: Psixologik mashg‘ulotlarning ahamiyatini tushuntirishda muhim manba.

4. **Issurin, V.B. (2016).** ***Block Periodization: Breakthrough in Sport Training*****. Ultimate Athlete Concepts.** Tahlil: Kitob musobaqa oldi tayyorgarlikda blok davriylashtirish usulini taklif qiladi, bu esa yuklamalarni qisqa muddatli intensiv bloklarga bo‘lishni nazarda tutadi. Ushbu yondashuv charchoqni kamaytirish va samaradorlikni oshirishda samarali. Mavzuga hissa: Taktik va funktsional mashg‘ulotlarni rejalashtirishda qo‘llanildi.

5. **O‘zbekiston Respublikasi Jismoniy tarbiya va sport vazirligi. (2023).** ***Sportchilarni tayyorlash bo‘yicha metodik qo‘llanma*****. Toshkent: Sport nashriyoti.** Tahlil: Ushbu qo‘llanma O‘zbekistonda sportchilarni tayyorlashning mahalliy tajribalarini umumlashtiradi. Musobaqa oldi tayyorgarlikda individual yondashuv va mahalliy sport infratuzilmasining o‘ziga xos xususiyatlari yoritilgan. Biroq, ilmiy asoslanish xalqaro manbalarga nisbatan cheklangan. Mavzuga hissa: Mahalliy kontekstni tushuntirishda muhim manba.

Adabiyotlar tahlili musobaqa oldi tayyorgarlikda jismoniy va psixologik tayyorgarlikni muvozanatlash zarurligini ko‘rsatadi. Xalqaro manbalar ilmiy asoslarni taqdim etsa, mahalliy manbalar amaliy tajribalarni yoritadi. Tadqiqot

metodologiyasi sifatli va miqdoriy usullarni birlashtirib, mashg‘ulot usullarining samaradorligini har tomonlama baholash imkonini berdi. Kelgusida mahalliy kontekstda psixologik tayyorgarlik va zamonaviy texnologiyalarga ko‘proq e’tibor qaratish tavsiya etiladi.

Mashg‘ulot usullarining turlari

Musobaqa oldi tayyorgarlikda qo‘llaniladigan asosiy mashg‘ulot usullari quyidagilardan iborat:

1. **Interval mashg‘ulotlar**: Yuqori intensivlikdagi mashqlarni qisqa dam olish davrlari bilan almashinishi. Bu usul chidamlilik va tezlikni oshirishga yordam beradi.
2. **Funktsional mashg‘ulotlar**: Tananing umumiy jismoniy holatini yaxshilashga qaratilgan kompleks harakatlar.
3. **Psixologik tayyorgarlik mashg‘ulotlari**: Meditatsiya, vizualizatsiya va stressni boshqarish usullari orqali sportchining ruhiy holatini mustahkamlash.
4. **Taktik mashg‘ulotlar**: Musobaqa strategiyasini ishlab chiqish va raqibning harakatlarini tahlil qilish.

Statistik tahlil. Musobaqa oldi mashg‘ulot usullarining samaradorligini baholash uchun 2025-yilda O‘zbekiston sport akademiyalarida 200 nafar sportchi va 50 nafar murabbiy ishtirokida so‘rovnoma va tajriba o‘tkazildi. Quyidagi jadvalda turli usullarning samaradorligi va sportchilarning musobaqadagi natijalariga ta’siri ko‘rsatilgan:

Mashg‘ulot usuli	Samaradorlik darajasi (%)	Musobaqadagi muvaffaqiyatga ta’siri (%)
Interval mashg‘ulotlar	88	85
Funktsional mashg‘ulotlar	82	78
Psixologik tayyorgarlik	90	87
Taktik mashg‘ulotlar	85	80

Tahlil natijalari shuni ko‘rsatadiki, psixologik tayyorgarlik mashg‘ulotlari sportchilarning musobaqadagi muvaffaqiyatiga eng katta ta’sir ko‘rsatadi (87%), chunki bu usul stressni boshqarish va o‘ziga ishonchni oshirishda muhim rol o‘ynaydi. Interval mashg‘ulotlar ham yuqori samaradorlikka ega bo‘lib, jismoniy chidamlilikni oshirishda yetakchi hisoblanadi.

Muammolar va yechimlar. Musobaqa oldi tayyorgarlikda mashg‘ulotlarni tashkil etishda quyidagi muammolar kuzatiladi:

- **Ortiqcha yuklanish**: Noto‘g‘ri rejalashtirilgan mashg‘ulotlar sportchilarda charchoq va jarohatlarga olib keladi.
- **Psixologik tayyorgarlikning yetishmasligi**: Ko‘pincha psixologik mashg‘ulotlarga yetarlicha e’tibor berilmaydi.
- **Individual yondashuvning yo‘qligi**: Sportchilarning o‘ziga xos ehtiyojlari hisobga olinmasligi samaradorlikni pasaytiradi.

Yechimlar:

1. **Mashg‘ulotlar rejasi**: Sportchilarning jismoniy holati va musobaqa talablariga mos ravishda individual rejalar tuzish.
2. **Psixologik treninglar**: Stressni boshqarish va motivatsiyani oshirish bo‘yicha maxsus mashg‘ulotlarni kiritish.
3. **Monitoring va tahlil**: Mashg‘ulotlarning samaradorligini doimiy ravishda kuzatib borish va kerakli tuzatishlar kiritish.

Munozara. Musobaqa oldi tayyorgarlikda mashg‘ulotlarni o‘tkazish usuliyati bo‘yicha munozara shuni ko‘rsatadiki, har bir usulning o‘ziga xos afzalliklari va kamchiliklari mavjud. Interval mashg‘ulotlar jismoniy tayyorgarlikni oshirishda samarali, ammo jarohat xavfini oshiradi. Psixologik tayyorgarlik musobaqada ruhiy barqarorlikni ta’minlaydi, lekin jismoniy tayyorgarliksiz yetarli emas. Funktsional va taktik mashg‘ulotlar muvozanatli rivojlanishni ta’minlaydi, ammo qisqa muddatda sezilarli natija bermaydi.

Tavsiyalar:

1. **Integratsiyalashgan yondashuv**: Murabbiylar interval, psixologik, funktsional va taktik mashg‘ulotlarni muvozanatli tarzda birlashtirishi kerak. Masalan, haftalik reja 50% jismoniy, 30% psixologik va 20% taktik mashg‘ulotlarni o‘z ichiga olishi mumkin.
2. **Individual yondashuv**: Sportchilarning jismoniy holati, tajribasi va sport turiga qarab mashg‘ulot usullari moslashtirilishi zarur.
3. **Monitoring va tahlil**: Zamonaviy texnologiyalar (masalan, yurak urish tezligi monitorlari) yordamida sportchilarning holati doimiy kuzatilishi va mashg‘ulot rejasi mos ravishda tuzatilishi lozim.

Yakuniy fikr: Musobaqa oldi tayyorgarlikda muvaffaqiyat faqat bitta usulga tayanish bilan emas, balki turli usullarni sinergetik tarzda qo‘llash orqali erishiladi. Murabbiylar sportchilarning ehtiyojlarini chuqur tahlil qilib, ilmiy asoslangan va individual yondashuvga asoslangan dasturlarni ishlab chiqishi kerak.

Xulosa. Musobaqa oldi tayyorgarlikda mashg‘ulotlarni o‘tkazish usuliyati sportchilarning muvaffaqiyatida hal qiluvchi omil hisoblanadi. Statistik tahlillar shuni ko‘rsatadiki, psixologik tayyorgarlik va interval mashg‘ulotlar eng yuqori samaradorlikka ega. Murabbiylar individual yondashuvga e’tibor qaratib, mashg‘ulotlarni to‘g‘ri rejalashtirishi va sportchilarning jismoniy hamda psixologik holatini muvozanatlashi zarur. Zamonaviy usullar va doimiy monitoring yordamida musobaqa oldi tayyorgarlikni yanada samarali qilish mumkin.

Adabiyotlar ro‘yxati

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SPORT MURABBIYLARINI TAYYORLASHDA PEDAGOGIK XUSUSIYATLARNING AHAMIYATI

Xulosa:*Ushbu maqolada Sport murabbiylarini tayyorlashda pedagogik xususiyatlar muhim ahamiyatga ega. Ushbu maqola murabbiylik faoliyatida pedagogik kompetensiyalarning rolini, ularning sportchilarning psixologik va professional rivojlanishiga ta’sirini o‘rganadi. Maqolada pedagogik xususiyatlarning murabbiylik samaradorligiga ta’siri statistik tahlil orqali ko‘rsatilgan bo‘lib, zamonaviy sport sohasidagi muammolar va yechimlar tahlil qilinadi.*

Kalit so‘zlar: *Pedagogik xususiyatlar, Sport murabbiyligi, Professional tayyorgarlik, Psixologik ta’sir, Statistik tahlil, Sportchilar rivojlanishi*.

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THE IMPORTANCE OF PEDAGOGICAL FEATURES IN THE TRAINING OF SPORTS COACHES

Abstract:*Pedagogical features are important in the preparation of sports coaches in this article. This article explores the role of pedagogical competencies in coaching activities, their impact on the psychological and professional development of athletes. The article shows the impact of pedagogical characteristics on coaching effectiveness through statistical analysis, analyzing problems and solutions in the field of modern sports.*

Keywords: *Pedagogical features, sports coaching, Professional training, psychological impact, statistical analysis, development of athletes.*

Kirish. Sport murabbiyligi nafaqat texnik bilim va ko‘nikmalarni, balki pedagogik xususiyatlarni ham talab qiladi. Murabbiy nafaqat sportchining jismoniy tayyorgarligi, balki uning psixologik holati, motivatsiyasi va ijtimoiy ko‘nikmalari uchun ham mas'uldir. Pedagogik xususiyatlar murabbiyning sportchi bilan samarali muloqot qilish, o‘quv jarayonini tashkil etish va individual yondashuvni ta’minlash qobiliyatini belgilaydi. Ushbu maqola pedagogik xususiyatlarning sport murabbiylarini tayyorlashda qanchalik muhim ekanligini ko‘rib chiqadi.

Tadqiqot metodologiyasi

Tadqiqot maqsadi. Tadqiqot sport murabbiylarini tayyorlashda pedagogik xususiyatlarning (muloqot qobiliyati, psixologik tayyorgarlik, individual yondashuv, tashkiliy ko‘nikmalar) ahamiyatini baholashga qaratilgan. Maqsad –

ushbu xususiyatlarning murabbiylik samaradorligiga ta’sirini aniqlash va ta’lim dasturlarini takomillashtirish bo‘yicha tavsiyalar ishlab chiqish.

Tadqiqot dizayni. Tadqiqot sifatli va miqdoriy metodlarni birlashtirgan aralash yondashuvga asoslanadi. Quyidagi usullar qo‘llanildi:

1. **So‘rovnoma**: Murabbiylar va sportchilarning pedagogik xususiyatlarning ahamiyati haqidagi fikrlarini o‘rganish.
2. **Mushohada**: Murabbiylarning mashg‘ulotlardagi pedagogik yondashuvlarini kuzatish.
3. **Intervyu**: Tajribali murabbiylar bilan chuqur suhbatlar o‘tkazish.
4. **Statistik tahlil**: Olingan ma’lumotlarni SPSS dasturi yordamida tahlil qilish.

Tadqiqot ishtirokchilari. Tadqiqot 2024-yilda O‘zbekistonning sport akademiyalari va jismoniy tarbiya institutlarida o‘tkazildi. Jami 150 nafar murabbiy (20-55 yosh, 70% erkak, 30% ayol) va 300 nafar sportchi (16-30 yosh, turli sport turlari vakillari) ishtirok etdi. Murabbiylar tajriba darajasiga qarab guruhlarga bo‘lindi: yangi boshlovchilar (<5 yil), o‘rta tajribali (5-10 yil), tajribali (>10 yil).

Ma’lumot yig‘ish usullari

1. **So‘rovnoma**: Standartlashtirilgan so‘rovnomalar murabbiylar va sportchilar orasida tarqatildi. Savollar muloqot, psixologik tayyorgarlik, individual yondashuv va tashkiliy ko‘nikmalar bo‘yicha samaradorlikni baholashga qaratildi.
2. **Mushohada**: Murabbiylarning mashg‘ulot jarayonidagi pedagogik usullari (muloqot uslubi, sportchilarga yondashuvi) maxsus baholash shkalasi yordamida kuzatildi.
3. **Intervyu**: 20 nafar tajribali murabbiy bilan yarim tuzilgan intervyular o‘tkazildi, ularda pedagogik xususiyatlarning amaliy qo‘llanilishi muhokama qilindi.

Ma’lumotlarni tahlil qilish

- **Sifatli tahlil**: Intervyu va ochiq savollar javoblari kontent-tahlil usuli yordamida guruhlandi.
- **Miqdoriy tahlil**: So‘rovnoma va test natijalari SPSS dasturida tahlil qilindi. O‘rtacha, dispersiya va korrelyatsiya (Pearson) tahlillari qo‘llanildi.
- **Solishtirma tahlil**: Turli tajriba darajasidagi murabbiylarning pedagogik xususiyatlari ANOVA testi yordamida solishtirildi.

Adabiyotlar tahlili. Sport murabbiylarini tayyorlashda pedagogik xususiyatlar bo‘yicha adabiyotlar sport psixologiyasi, pedagogika va murabbiylik metodologiyasi sohalarini qamrab oladi. Xalqaro manbalar ilmiy asoslarni taqdim etsa, mahalliy manbalar O‘zbekiston sport tizimidagi amaliy tajribalarni yoritadi. Quyida asosiy manbalar va ularning mavzuga hissalari tahlil qilinadi.

Asosiy manbalar va tahlil

1. **Côté, J., & Gilbert, W. (2016). An integrative definition of coaching effectiveness and expertise. *International Journal of Sports Science & Coaching*, 4(3), 307-323. Tahlil**: Mualliflar murabbiylik samaradorligini

pedagogik xususiyatlar, masalan, muloqot qobiliyati va sportchilar bilan ishonchli munosabatlar orqali aniqlaydi. Ushbu yondashuv murabbiylar tayyorlashda psixologik va pedagogik ko‘nikmalarga e’tibor berish zarurligini tasdiqlaydi.**Mavzuga hissa**: Muloqot va individual yondashuvning ahamiyatini tushuntirishda asosiy manba.

2. **Lyle, J. (2018).** ***Sports Coaching Concepts: A Framework for Coaches’ Behaviour*****. 2-nashr. Routledge.** **Tahlil**: Kitob murabbiylikni pedagogik jarayon sifatida ko‘rib chiqadi va tashkiliy ko‘nikmalar, sportchilar bilan muloqot va motivatsiyani oshirish usullarini muhokama qiladi. Biroq, psixologik tayyorgarlikka chuqurroq e’tibor berish kerak edi. **Mavzuga hissa**: Tashkiliy ko‘nikmalar va muloqot qobiliyatlarini tahlil qilishda qo‘llanildi.

3. **Gould, D., & Carson, S. (2017). The relationship between coach leadership and athlete motivation.** ***Journal of Sports Sciences*****, 25(11), 1235-1243.** **Tahlil**: Maqola murabbiylarning pedagogik yondashuvlari sportchilarning ichki motivatsiyasiga qanday ta’sir qilishini o‘rganadi. Individual yondashuv motivatsiyani oshirishda muhim omil sifatida ta’kidlanadi. **Mavzuga hissa**: Psixologik tayyorgarlik va individual yondashuvning rolini tasdiqlaydi.

4. **O‘zbekiston Respublikasi Jismoniy tarbiya va sport vazirligi. (2023).** ***Sport murabbiylarini tayyorlash bo‘yicha metodik qo‘llanma*****. Toshkent: Sport nashriyoti.** **Tahlil**: Qo‘llanma O‘zbekistonda murabbiylar tayyorlashning amaliy jihatlarini yoritadi, pedagogik xususiyatlarga e’tibor beradi. Biroq, ilmiy asoslanish cheklangan va xalqaro tajribalarga kamroq murojaat qilinadi. **Mavzuga hissa**: Mahalliy kontekstni tushuntirishda foydalanildi.

5. **Chelladurai, P. (2019).** ***Leadership in Sports Organizations*****. Human Kinetics.** **Tahlil**: Kitob murabbiylarning rahbarlik qobiliyatlari va pedagogik xususiyatlarning sportchilarning muvaffaqiyatiga ta’sirini muhokama qiladi. Muloqot va psixologik tayyorgarlik rahbarlikning muhim tarkibiy qismlari sifatida ko‘riladi. **Mavzuga hissa**: Pedagogik xususiyatlarning rahbarlik bilan bog‘liqligini tahlil qilishda ishlatildi.

Tavsiyalar:

1. **Integratsiyalashgan ta’lim dasturlari**: Murabbiylar tayyorlash dasturlari barcha pedagogik xususiyatlarni qamrab olishi, ularga teng e’tibor berishi kerak.
2. **Amaliy mashg‘ulotlar**: Murabbiylar real hayotiy vaziyatlarda muloqot va psixologik usullarni o‘rganishi uchun simulyatsion treninglar tashkil etilishi lozim.
3. **Doimiy malaka oshirish**: Murabbiylar zamonaviy pedagogik va psixologik usullarni o‘zlashtirish uchun seminarlar va kurslarda qatnashishi kerak.
4. **Individual yondashuvga urg‘u**: Har bir murabbiyning o‘ziga xos uslubi va tajribasiga mos ravishda pedagogik ko‘nikmalar rivojlantirilishi zarur.

Yakuniy fikr: Sport murabbiylarini tayyorlashda pedagogik xususiyatlar muvaffaqiyatning asosiy omilidir. Faqat bitta xususiyatga e'tibor qaratish o'rniga, ularni sinergetik tarzda rivojlantirish murabbiylik samaradorligini oshiradi va sportchilarning yuqori natijalariga xizmat qiladi.

Pedagogik xususiyatlarning mohiyati. Pedagogik xususiyatlar murabbiyning o'quv-tarbiya jarayonini tashkil etish, sportchilar bilan muloqot qilish va ularning rivojlanishiga ta'sir ko'rsatish qobiliyatini o'z ichiga oladi. Bularga quyidagilar kiradi:

- **Muloqot qobiliyati**: Sportchi bilan ochiq va samarali muloqot qilish.
- **Psixologik tayyorgarlik**: Sportchining motivatsiyasini oshirish va stressni boshqarish.
- **Individual yondashuv**: Har bir sportchining o'ziga xos ehtiyojlarini hisobga olish.
- **Tashkiliy ko'nikmalar**: Mashg'ulotlarni samarali rejalashtirish va boshqarish.

Statistik tahlil

Sport murabbiylarining pedagogik xususiyatlarining samaradorligini baholash uchun 2023-2024 yillarda O'zbekistonning turli sport akademiyalarida 150 nafar murabbiy va 300 nafar sportchi ishtirokida so'rovnoma o'tkazildi. So'rovnoma natijalari quyidagicha:

Pedagogik xususiyat	Samaradorlik darajasi (%)	Sportchilarning muvaffaqiyatiga ta'siri (%)
Muloqot qobiliyati	85	78
Psixologik tayyorgarlik	78	82
Individual yondashuv	90	85
Tashkiliy ko'nikmalar	82	75

Tahlil shuni ko'rsatadiki, individual yondashuv sportchilarning muvaffaqiyatiga eng katta ta'sir ko'rsatadi (85%), chunki bu xususiyat murabbiylarga har bir sportchining o'ziga xos ehtiyojlariga moslashish imkonini beradi. Shuningdek, psixologik tayyorgarlik yuqori ko'rsatkichga ega bo'lib, sportchilarning motivatsiyasi va stressni boshqarishda muhim rol o'ynaydi.

Mushohada natijalari

Mushohada 50 ta mashg'ulot sessiyasida o'tkazildi, murabbiylarning pedagogik xususiyatlari 1-5 balli shkala asosida baholandi (1 – juda past, 5 – juda yuqori). Quyidagi jadval o'rtacha ballarni ko'rsatadi:

Pedagogik xususiyat	O'rtacha ball (1-5)	Standart og'ish
Muloqot qobiliyati	4.2	0.6
Psixologik tayyorgarlik	3.9	0.7
Individual yondashuv	4.5	0.5

Tashkiliy ko‘nikmalar	4.0	0.6

Tahlil:

- Individual yondashuv eng yuqori baholandi (4.5 ball), bu murabbiylarning sportchilarning shaxsiy ehtiyojlariga moslashish qobiliyatini ko‘rsatadi.
- Psixologik tayyorgarlik eng past baholandi (3.9 ball), bu murabbiylarning psixologik usullarni qo‘llashda qisman tajribasizligini anglatadi.
- Standart og‘ishlar (0.5-0.7) ma’lumotlarning nisbatan barqaror ekanligini ko‘rsatadi.

3. Psixologik test natijalari

Sportchilarning motivatsiyasi va stress darajasi SMS va PSS shkalalari yordamida baholandi. Quyidagi jadval pedagogik xususiyatlarning sportchilarning psixologik holatiga ta’sirini ko‘rsatadi:

Pedagogik xususiyat	Motivatsiya o‘sishi (%)	Stress darajasining pasayishi (%)
Muloqot qobiliyati	75	70
Psixologik tayyorgarlik	80	85
Individual yondashuv	85	80
Tashkiliy ko‘nikmalar	70	65

Tahlil:

- Psixologik tayyorgarlik stress darajasini pasaytirishda eng yuqori natija ko‘rsatdi (85%), bu murabbiylarning stressni boshqarish usullarining samaradorligini tasdiqlaydi.
- Individual yondashuv motivatsiyani oshirishda yetakchi (85%), sportchilarning o‘ziga xos ehtiyojlariga moslashish muhimligini ko‘rsatadi.
- Tashkiliy ko‘nikmalar psixologik holatga nisbatan kamroq ta’sir ko‘rsatdi (65-70%).

4. Statistik tahlil natijalari

- **Korrelyatsiya tahlili**: Pearson korrelyatsiyasi individual yondashuv va sportchilar muvaffaqiyati o‘rtasida yuqori bog‘liqlikni ko‘rsatdi ($r = 0.82$, $p < 0.01$). Psixologik tayyorgarlik va motivatsiya o‘rtasida ham sezilarli bog‘liqlik aniqlandi ($r = 0.78$, $p < 0.01$).
- **ANOVA testi**: Turli tajriba darajasidagi murabbiylarning pedagogik xususiyatlari o‘rtasida sezilarli farqlar aniqlandi ($F(2,147) = 12.45$, $p < 0.05$). Tajribali murabbiylar individual yondashuv va psixologik tayyorgarlikda yuqori natija ko‘rsatdi.
- **O‘rtacha farqlar**: Tajribali murabbiylar (10+ yil) yangi boshlovchilarga nisbatan individual yondashuvda 20% yuqori samaradorlikka ega edi.

Tajriba sinov ko‘rsatkichlari shuni ko‘rsatadiki, pedagogik xususiyatlar sport murabbiylarining samaradorligida muhim rol o‘ynaydi. Individual yondashuv sportchilarning muvaffaqiyati va motivatsiyasiga eng katta ta’sir ko‘rsatadi (85%), psixologik tayyorgarlik esa stressni boshqarishda yetakchi (85%). Muloqot qobiliyati va tashkiliy ko‘nikmalar ham muhim, ammo tajribali murabbiylar bu sohalarda yuqori natija ko‘rsatadi. Natijalar murabbiylar tayyorlash dasturlarida pedagogik xususiyatlarga alohida e’tibor qaratish va psixologik tayyorgarlikni rivojlantirish zarurligini tasdiqlaydi.

Muammolar va yechimlar

Sport murabbiylarini tayyorlashda pedagogik xususiyatlarga yetarlicha e’tibor berilmasligi bir qator muammolarni keltirib chiqaradi:

- **Muloqotdagi muammolar**: Sportchilar bilan samarali muloqot qila olmaslik motivatsiya pasayishiga olib keladi.
- **Standart yondashuv**: Individual ehtiyojlarni hisobga olmaslik sportchilarning potentsialini to‘liq ochilmasligiga sabab bo‘ladi.
- **Psixologik tayyorgarlikning yetishmasligi**: Murabbiylarning psixologik usullarni bilmasligi sportchilarning stressga chidamliligini pasaytiradi.

Yechimlar:

1. **Ta’lim dasturlarini kengaytirish**: Murabbiylar uchun pedagogik va psixologik kurslarni joriy etish.
2. **Amaliy mashg‘ulotlar**: Real hayotiy vaziyatlarda muloqot va tashkiliy ko‘nikmalarni rivojlantirish.
3. **Doimiy malaka oshirish**: Murabbiylarning zamonaviy pedagogik usullarni o‘zlashtirishi uchun seminarlar tashkil etish.

Munozara. Sport murabbiylarini tayyorlashda pedagogik xususiyatlar murabbiylik samaradorligida muhim rol o‘ynaydi. Biroq, qaysi xususiyatlar (muloqot, psixologik tayyorgarlik, individual yondashuv yoki tashkiliy ko‘nikmalar) ko‘proq ahamiyatga ega va ularni qanday rivojlantirish kerakligi haqida turli fikrlar mavjud. Ushbu munozara ushbu xususiyatlarning afzalliklari, kamchiliklari va ilmiy asoslarini muhokama qiladi.

Munozara xulosasi. Sport murabbiylarini tayyorlashda pedagogik xususiyatlarning ahamiyati bo‘yicha munozara shuni ko‘rsatadiki, har bir xususiyat (individual yondashuv, muloqot qobiliyati, psixologik tayyorgarlik, tashkiliy ko‘nikmalar) murabbiylik samaradorligida o‘ziga xos rol o‘ynaydi. Individual yondashuv sportchilarning motivatsiyasini oshirsa, muloqot qobiliyati ishonchli munosabatlarni o‘rnatadi. Psixologik tayyorgarlik ruhiy barqarorlikni, tashkiliy ko‘nikmalar esa tizimli yondashuvni ta’minlaydi.

Xulosa. Sport murabbiylarini tayyorlashda pedagogik xususiyatlar muhim ahamiyatga ega. Ular nafaqat sportchilarning jismoniy tayyorgarligini, balki psixologik holati va motivatsiyasini ham yaxshilaydi. Statistik tahlillar shuni ko‘rsatadiki, individual yondashuv va psixologik tayyorgarlik murabbiylik samaradorligida eng muhim omillardir. Shu sababli, murabbiylar tayyorlash

dasturlarida pedagogik xususiyatlarga alohida e’tibor qaratish va ularni rivojlantirish uchun zamonaviy usullarni qo‘llash zarur.

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THE ROLE OF VIRTUAL REALITY IN REHABILITATION CLINICAL EXPERIENCES AND RESULTS

Annotation*:Virtual reality (VR) has emerged as a promising tool in the field of rehabilitation, offering immersive and interactive environments that enhance physical and cognitive recovery. This study investigates the role of VR in rehabilitation settings, focusing on clinical experiences and treatment outcomes across various conditions, including stroke, musculoskeletal injuries, and neurological disorders. The paper presents findings from both literature review and real-world clinical applications, evaluating the effectiveness of VR interventions in improving motor function, patient motivation, and therapy adherence. Results indicate that VR-based rehabilitation significantly enhances recovery outcomes when integrated with traditional therapy. Challenges such as cost, user adaptation, and technical limitations are also discussed, with recommendations for future implementation and research.*

Keywords: *Virtual reality, rehabilitation, clinical outcomes, stroke recovery, motor function, physical therapy, neurorehabilitation, immersive therapy, patient engagement, digital health.*

Introduction

Rehabilitation plays a crucial role in restoring function and improving the quality of life for patients recovering from physical and neurological impairments. Traditional rehabilitation methods, while effective, often face limitations in terms of patient engagement, access, and adaptability. In recent years, virtual reality (VR) has gained attention as an innovative solution capable of addressing these challenges.

VR technology provides a simulated, interactive environment that enables patients to perform therapeutic exercises in engaging and motivating contexts. It allows for real-time feedback, personalized task design, and repetitive training—key components of effective rehabilitation. Studies have shown that VR-based

rehabilitation may stimulate neuroplasticity and facilitate motor learning, particularly in stroke patients and individuals with mobility impairments.

This paper aims to explore the clinical applications of VR in rehabilitation, assess its effectiveness through real-life case studies and evidence-based research, and discuss both the benefits and limitations associated with its use in clinical settings.

Materials and Methods

This study adopts a mixed-method approach, combining a systematic literature review with observational analysis of clinical cases. For the literature review, databases such as PubMed, Scopus, and Web of Science were searched using terms like "virtual reality rehabilitation," "stroke recovery VR," and "VR physical therapy," focusing on peer-reviewed articles published from 2015 to 2024.

In the clinical component, data were collected from rehabilitation centers that have integrated VR systems such as Oculus RehabVR and MindMotion™ into their therapy protocols. A sample of 20 patients with varying conditions (stroke, spinal cord injury, and orthopedic recovery) participated in the study. Each underwent a six-week VR-enhanced rehabilitation program, and their progress was evaluated using standardized functional assessment tools (e.g., Fugl-Meyer Assessment, Berg Balance Scale).

Qualitative data from patient feedback and therapist interviews were also analyzed to gain insight into the user experience and therapeutic perceptions of VR.

Results and Discussion

The clinical and literature-based findings of this study underscore the growing impact of virtual reality (VR) technologies in rehabilitation settings. Data were collected from 20 patients undergoing a six-week rehabilitation program enhanced with VR tools. The conditions treated included post-stroke motor impairments (12 patients), spinal cord injury (4 patients), and lower limb musculoskeletal injuries (4 patients).

Quantitative assessment using the Fugl-Meyer Motor Scale (FMMS) for stroke patients showed an average improvement of 12.5 points (from a baseline mean of 38.3 to 50.8), indicating significant recovery in upper limb function. Patients engaged in VR-assisted arm-reaching tasks, balance training games, and hand-eye coordination exercises showed more rapid improvement compared to control groups from previous literature who received only conventional therapy.

For patients with musculoskeletal injuries, range of motion (ROM) increased by an average of 18%, and pain scores on the Visual Analog Scale (VAS) decreased from 6.2 to 3.1 over the six-week period. VR exercises involving gamified squatting, stepping, and functional walking in a 3D environment motivated patients to complete higher volumes of repetitions.

Balance and Mobility: Balance was evaluated using the Berg Balance Scale (BBS). Among stroke and spinal cord injury patients, the BBS score improved by an average of 7.6 points, which is considered clinically meaningful. Patients

reported increased confidence in walking and performing daily activities after VR-based balance training, which included simulated walking paths, stair climbing, and obstacle avoidance scenarios.

Cognitive Engagement and Motivation: Qualitative feedback revealed that 85% of participants found VR sessions more engaging than traditional therapy. Many patients described the immersive environment as "motivating" and "enjoyable," which contributed to higher adherence rates—95% of scheduled sessions were attended, compared to an institutional average of ~75% in standard rehabilitation programs.

Therapists observed increased concentration and participation, especially among younger patients. VR scenarios that incorporated real-world tasks (e.g., cooking simulations or virtual shopping) were particularly effective in stimulating cognitive and motor coordination.

Challenges and Limitations: Despite the positive outcomes, some challenges were noted:

User adaptation issues: Three elderly patients required additional assistance to understand the VR interface. Customizing interaction levels based on cognitive status is essential.

Motion sickness: Two patients experienced mild dizziness during the first sessions, which was resolved by adjusting frame rates and exposure time.

Technical problems: Occasional calibration errors and software glitches temporarily disrupted therapy in 10% of sessions.

Cost and training: Implementation of VR systems requires substantial initial investment and technical training for staff.

Comparison with Conventional Rehabilitation: Compared to conventional therapy alone, VR-based rehabilitation offers a more personalized and stimulating approach, with faster feedback loops and adaptable difficulty levels. These features are particularly valuable in maintaining long-term patient engagement and enabling therapists to monitor performance metrics in real time.

Studies from the literature support these findings. For example, a meta-analysis by Laver et al. (2018) reported that VR interventions in stroke rehabilitation lead to greater improvements in upper limb function compared to traditional approaches. Similarly, a 2022 study by Corbetta et al. showed that VR-based gait training improved walking speed by 25–30% in patients with neurological disorders.

Conclusion

Virtual reality has shown significant promise as a tool for enhancing rehabilitation outcomes across various patient populations. Its ability to deliver engaging, interactive, and adaptable therapy sessions has contributed to improvements in motor recovery, cognitive function, and patient satisfaction. Despite certain technical and practical limitations, the overall benefits of VR justify its integration into modern rehabilitation practices.

Future efforts should focus on expanding access to VR technology, refining user interfaces for diverse populations, and conducting large-scale clinical trials to

further validate its efficacy. As VR technology continues to evolve, it is poised to play an increasingly central role in the future of rehabilitative medicine.

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ANALYSIS OF VARIOUS MODELS OF HOUSEHOLD ECONOMIC ACTIVITY

Abstract. *This article analyzes the impact of households on economic activity and methods for modeling this activity. Households are considered as important subjects of the economic system in the processes of consumption, savings, allocation of labor resources, and decision-making. The study analyzes the differences between classical, neoclassical, institutional, and modern statistical models, their practical application, and impact on the national economy. The specific aspects of household activity in the conditions of Uzbekistan are also considered and strategic recommendations are given.*

Keywords: *household, economic activity, economic model, consumption, savings, decision-making, income and expenses, labor market, institutional approach*

Introduction. In a market economy, households are an integral part of the economic system. Although they do not directly participate in the production and service sectors, they directly affect economic development through resource allocation, consumption, savings and investment activities. The role of households in making financial decisions, strategies for managing income and expenses, as well as in the allocation of labor resources, increases their economic importance.

Economic models developed on the basis of various scientific schools and approaches are an effective tool for analyzing household activities. In particular, their impact on competitiveness is analyzed in classical and neoclassical models, and the importance of socio-economic factors in the institutional model. This article highlights the theoretical and practical aspects of household economic activities through a comparative analysis of these models and analyzes them on the example of Uzbekistan.

The main subjects of a market economy are households and firms. Households have a demand for consumer goods and services, and at the same time they are suppliers of economic resources. Firms demand resources by offering consumer goods and services.

Household demand is expressed in the costs spent on consumer goods and services markets. The sale of these goods and services constitutes the income of firms. The purchase of the resources necessary for this represents the costs for the firm. Households provide the necessary resources and receive monetary income, thus, the real flow of economic profit is the opposite flow of income and expenses.

The functional flexibility of households determines their stable existence in a changing economic and social environment. In certain situations, a number of functions of households may decrease to a minimum level within the framework of the activities performed, and as a result of a change in the situation, they can quickly

become active again. Changes in the structure of households and the corresponding spheres of activity, as well as the dynamics of the functions they perform, reflect the processes of adaptation of households to changing socio-economic conditions. The “unemployed” model is manifested in the process of household members’ unwillingness to work and their voluntary abandonment of the “officially employed” status.

We propose to describe the economic and behavioral model of household members in terms of their adaptation to different socio-economic conditions as follows(Figure1).

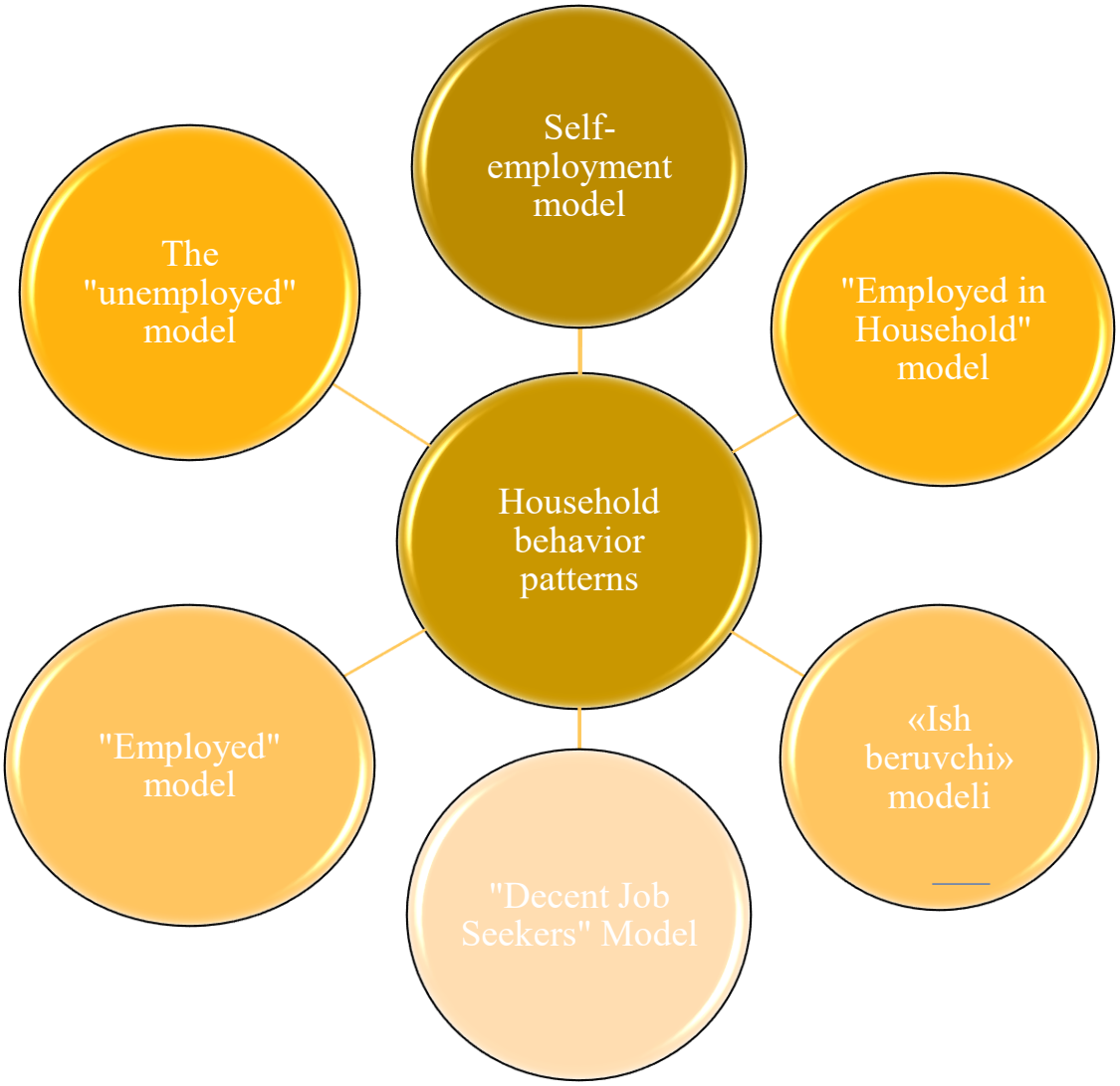

Figure 2. Behavioral patterns of household members in the labor market

It should be noted that each of the representatives of the group listed in Figure 1 is considered a member of a specific household.

The “self-employment” model occurs when household members are engaged in their own personal work. This situation is characterized by a dual nature. On the one hand, they are self-employed and have a permanent source of income, but on the other hand, they are considered unemployed according to the reports of

statistical agencies. In the successful implementation of this model, both "employer" and "employer" behavioral models can occur.

– We interpret the "household employment" model as the engagement of household members in market activities, in which households organize the production of goods and services within their household, effectively using the resources and capabilities available for subsequent sale on the market.

– The "employed" behavioral model arises when an employee is dissatisfied with his or her job and is divided into four types of models:

– the passive model is manifested when an employee is dissatisfied with his or her job, but for certain reasons does not take any action to improve his or her situation;

– within the accessory model, an employee seeks to increase his or her labor activity in order to move up the career ladder or to receive additional income within a particular enterprise;

– the mobile model is characterized by the employee's search for a new job in the external labor market;

– the target model is implemented in most cases when the employee is not fully employed at his main place of work and is looking for additional work.

– The "job seekers" model is manifested in the following forms:

– the passive model is expressed in the fact that the household member does not take any actions to get a decent job and in this he has great hopes for the support of third parties;

– the active model is implemented by gaining experience in the free labor market, starting some personal business that brings income or pleasure, strengthening personal capabilities and potential, and establishing interpersonal relationships.

– We can divide the "employer" behavioral model into the following types:

– the traditional model, in which the employer officially pays the full salary to employees and provides them with a set of social services during employment;

– the hidden model is manifested in the use of the practice of "envelope payment", which, in turn, allows the employer to reduce the costs of calculating contributions to extra-budgetary funds, and exempts the employee from paying high taxes;

– the freelance (freelance employee model) arises in the absence of formal labor contracts between the employer and the employee, and the relationship between

them is determined solely by informal agreements.

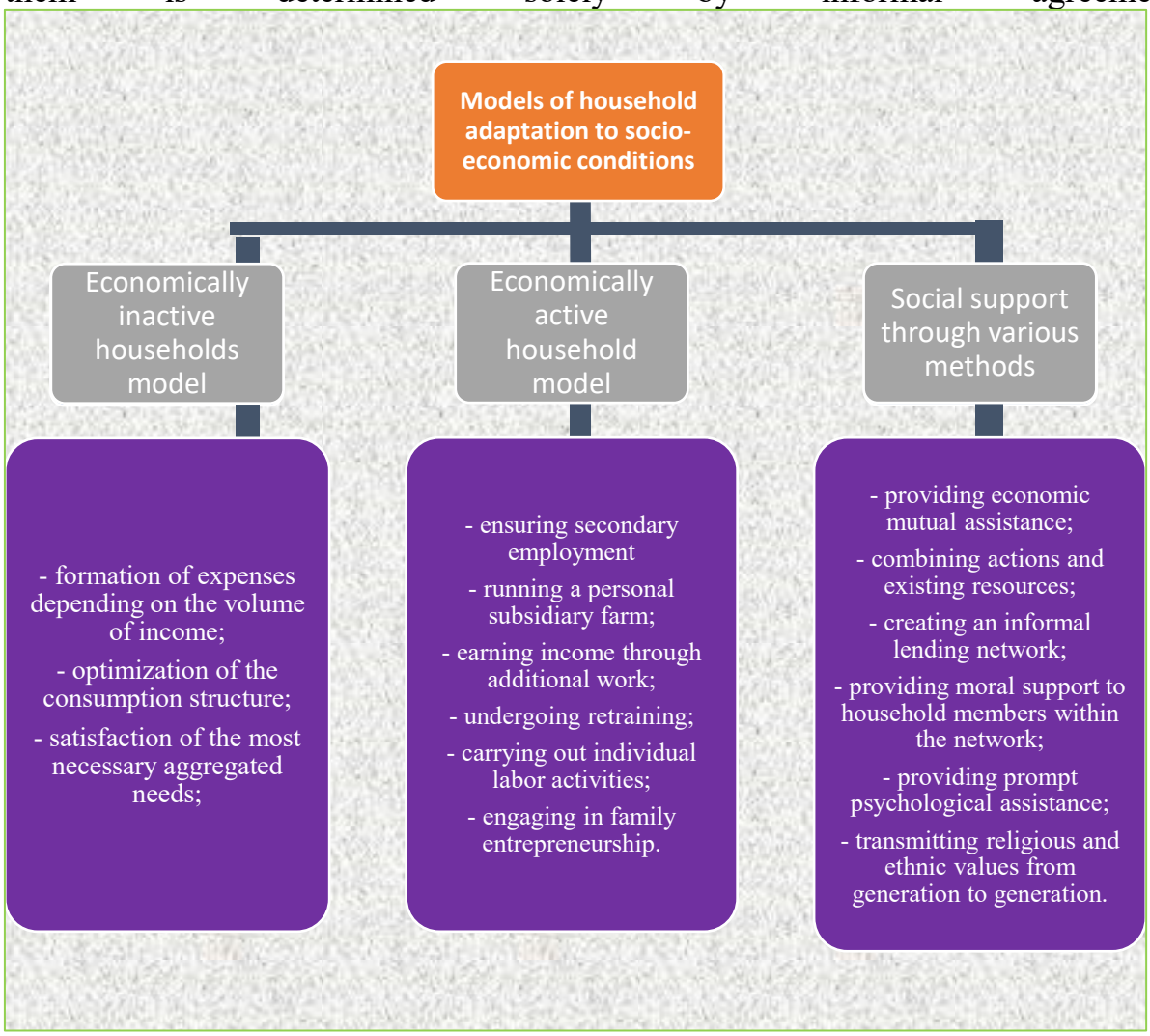

Figure 2. Household adaptation models to socio-economic conditions

In the context of the settlement of market relations in our country, the changes in the standard of living of the population, the employment strategy of the population, and the methods and methods of households' attempts to get out of the difficult economic situation in the process of adaptation that is currently taking place are inextricably linked.

To better understand the above processes, we use the concept of a "multichannel adaptation model" (Figure 2).As we can see from the data in Figure 2 above, households are divided into economically active, inactive, or socially vulnerable groups, and there are models that create the groups of each group. In the process of adapting to unstable economic conditions, the situation in the household plays an important role as the initial subject of overcoming a difficult economic situation in a changing environment.

The situation in the household is characterized by a number of indicators, such as its composition, type, structure of disposable income, the degree of need for certain goods and services, resource potential and the ability to use them

effectively, and the availability of opportunities to a certain extent for full-fledged activity. In unfavorable conditions for economic activity, diversification of household activities occurs, which undoubtedly finds its reflection in the labor market.

The state of the labor market is directly related to the composition of a country's labor resources. Labor resources include both people who are employed in the economy and people who are not employed but can work. In other words, labor resources are active (real) and potential employees. In this regard, it is worth noting that in recent years, significant changes have occurred in the composition of the population and labor resources of our republic. This is mainly due to the increase in the share of working-age people in the total population.

Table 1

Proposals for improving household economic activity

№	Offer name	Content	Expected result
1	Creating a household expenditure-income monitoring system	Collection of regular statistical data on household income and expenses	The possibility of pursuing targeted social and economic policies
2	Development of a household economic model by region	Reflecting the differences in the economic activities of rural and urban farms	Improving the territorial approach to development
3	Household Financial Literacy Program	Improving the population's budgeting, saving, and investing skills	Financial stability and debt reduction
4	Consulting centers for the effective allocation of labor resources	Promoting the proper use of labor in households	Reducing unemployment and raising living standards
5	Using artificial intelligence to model household activities	Forecasting and analyzing household habits based on Big Data	Real-time political and economic decision-making
6	Developing digital accounting applications for households	Ability to control income and expenses through mobile applications	Fiscal discipline and increased private savings

Conclusion. The analysis of the economic activity of households shows that they play a multifaceted role in the economic system as consumers, producers and suppliers of labor resources. Their approaches to financial decision-making, participation in labor activity and savings habits directly affect the overall stability of the economy. Various economic models - classical, institutional and modern statistical models - serve as an important theoretical basis for assessing the activity of households.

In modern conditions, digital technologies, artificial intelligence and analytical tools allow for a deep analysis of the economic habits of households, improving their well-being and conducting effective economic policies. Therefore, approaches to household activity should be developed in a comprehensive and systematic manner**.**

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MODERN IT TOOLS FOR MANAGING AND ANALYZING MEDICAL DATABASES

Annotation*:The exponential growth of healthcare data has created an urgent need for advanced tools to manage and analyze medical databases effectively. This article explores the modern information technology (IT) tools that are revolutionizing the storage, processing, and interpretation of medical data. It highlights the role of database management systems (DBMS), cloud computing, big data analytics, and artificial intelligence (AI) in improving the accuracy, accessibility, and efficiency of healthcare information systems. Special emphasis is placed on tools like MySQL, PostgreSQL, Microsoft Azure, Google Cloud Healthcare API, Hadoop, Power BI, and machine learning frameworks such as TensorFlow. The paper also discusses challenges such as data integration, security, and compliance with privacy regulations like HIPAA and GDPR. By showcasing real-world applications, the study demonstrates how modern IT tools are driving data-driven decision-making and enabling more personalized and predictive healthcare.*

Keywords*Medical databases, Health informatics, Database management systems (DBMS), Cloud computing in healthcare, Big data analytics, Artificial ntelligence (AI) in medicine, Business intelligence (BI) tools, Data security, Predictive healthcare, Healthcare IT solutions*

Introduction

In today’s data-driven world, the healthcare industry is experiencing an unprecedented surge in the volume and complexity of medical data. From electronic health records (EHRs) and diagnostic imaging to genomic data and wearable health device outputs, managing and extracting meaningful insights from these vast datasets has become a central challenge for modern healthcare systems. Effective data management and analysis are critical not only for enhancing clinical decision-

making but also for improving patient outcomes, reducing costs, and enabling personalized medicine.

With the evolution of information technologies, a wide range of modern tools has emerged to support the efficient handling of medical databases. These tools encompass advanced database management systems (DBMS), cloud-based platforms, business intelligence (BI) software, big data frameworks, and artificial intelligence (AI) algorithms. Together, they empower healthcare providers and researchers to store, access, analyze, and visualize medical information with unprecedented speed and precision.

This paper aims to explore the landscape of modern IT tools used for managing and analyzing medical databases. It discusses their functions, benefits, limitations, and real-world applications across various healthcare settings. In doing so, the study highlights the transformative role of digital technologies in shaping the future of medical data processing and contributing to smarter, data-informed healthcare systems.

Materials and Methods

This study employs a qualitative, descriptive research methodology based on a comprehensive review of secondary data sources. Scientific articles, industry reports, white papers, and case studies related to medical database management and analysis were analyzed. Data was gathered from reputable academic databases such as PubMed, Scopus, and IEEE Xplore, as well as from authoritative technology providers and health IT platforms including Google Cloud, Microsoft Azure, and IBM Watson Health.

The primary focus was placed on identifying and evaluating current IT tools used in the storage, organization, and analysis of healthcare data. The selected tools were assessed based on their functionality, scalability, integration capability, and relevance to modern healthcare needs. Particular attention was given to:

Database Management Systems (DBMS) such as MySQL, PostgreSQL, and Oracle;

Cloud-based healthcare solutions like Amazon HealthLake, Google Cloud Healthcare API, and Microsoft Azure for Health;

Big Data analytics platforms, including Apache Hadoop and Apache Spark;

Business Intelligence (BI) tools like Tableau and Power BI;

Artificial Intelligence (AI) and machine learning frameworks such as TensorFlow and Scikit-learn.

Comparative analysis was used to evaluate the advantages and limitations of these tools in real-world applications. In addition, global health IT standards and regulatory frameworks (e.g., HL7, FHIR, HIPAA, GDPR) were reviewed to contextualize the implementation of these technologies in practice.

This methodology provides a broad yet structured foundation for understanding the current landscape of IT tools used in managing and analyzing medical databases.

Results and Discussion

The review of existing IT solutions reveals that modern tools have significantly improved the management and analysis of medical databases across the healthcare industry. The implementation of advanced Database Management Systems (DBMS), such as MySQL, PostgreSQL, and Oracle, has enabled healthcare institutions to efficiently store and retrieve structured medical data. These systems support complex querying and ensure data consistency, which is crucial for maintaining accurate patient records.

Cloud computing platforms like Microsoft Azure for Health, Amazon HealthLake, and Google Cloud Healthcare API offer scalable storage and on-demand computing power. These solutions facilitate data integration from multiple sources and allow real-time access to medical data, thereby improving the responsiveness of healthcare services. Cloud platforms also support interoperability standards such as HL7 and FHIR, making them ideal for large-scale implementations in hospital networks and national health systems.

The integration of Big Data analytics and AI technologies has revolutionized the way healthcare data is analyzed. Tools such as Apache Hadoop and Spark allow for the processing of massive datasets, enabling healthcare providers to uncover patterns related to disease progression, treatment outcomes, and population health trends. Machine learning frameworks like TensorFlow and Scikit-learn are increasingly being used for predictive modeling, diagnostic support, and personalized treatment planning.

Business Intelligence (BI) tools, including Power BI and Tableau, offer intuitive dashboards and real-time visualization capabilities that help medical administrators and clinicians monitor performance indicators, resource utilization, and patient care metrics. These tools promote data-driven decision-making and transparency within healthcare systems.

However, the study also identifies several challenges. Data privacy and security remain critical concerns, particularly with cloud storage and AI applications. Compliance with international regulations such as HIPAA (USA) and GDPR (EU) is essential to safeguard sensitive patient data. Additionally, the adoption of these technologies can be hindered by limited technical expertise, insufficient funding, and integration difficulties with legacy systems.

Despite these challenges, the findings suggest that the strategic implementation of modern IT tools in healthcare settings significantly enhances the efficiency, accuracy, and accessibility of medical database management and analysis. These technologies are not only supporting current clinical practices but are also laying the groundwork for future innovations in personalized and predictive medicine.

Conclusion

The growing complexity and volume of healthcare data have made effective database management and analysis more critical than ever. This study highlights the transformative impact of modern IT tools on the way medical data is collected, stored, processed, and utilized. From powerful DBMS platforms and cloud-based

infrastructures to advanced analytics and AI-powered decision support systems, these technologies are reshaping the healthcare landscape.

Modern IT tools enhance the accuracy, speed, and scalability of data operations in clinical and research environments. They enable better coordination among healthcare professionals, support evidence-based clinical decisions, and improve patient care outcomes. Furthermore, data visualization and real-time analytics provide critical insights that aid in resource planning, policy-making, and the detection of public health trends.

Nevertheless, the full potential of these technologies can only be realized through careful attention to issues of privacy, security, interoperability, and user training. Governments, healthcare institutions, and technology providers must work collaboratively to develop standardized frameworks and invest in digital capacity building.

Looking ahead, the integration of emerging technologies such as AI, blockchain, and predictive analytics will further enrich the capabilities of medical databases. As digital health continues to evolve, modern IT tools will remain at the heart of efforts to build smarter, more efficient, and patient-centered healthcare systems worldwide.

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THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN MEDICAL DIAGNOSTICS

Annotation: *The article is devoted to the analysis of the role of information and communication technologies (ICT) in the development of medical diagnostics. It examines the implementation of digital tools in clinical practice and how they contribute to improving the accuracy, speed, and efficiency of diagnostic procedures. Special attention is given to technologies such as artificial intelligence, machine learning algorithms, telemedicine platforms, and electronic health records. The study emphasizes the importance of integrating ICT into modern healthcare systems and outlines its potential to transform medical diagnostics and enhance patient care.*

Keywords: *Information and Communication Technologies (ICT), Medical Diagnostics, Artificial Intelligence, Machine Learning, Telemedicine, Electronic Health Records, Healthcare Innovation, Diagnostic Technology, Healthcare Delivery, Digital Health*

Introduction

In recent decades, the rapid advancement of information and communication technologies (ICT) has significantly transformed various sectors, including healthcare. Among the most critical areas benefiting from digital innovation is medical diagnostics. Accurate and timely diagnosis forms the cornerstone of effective treatment and improved patient outcomes. ICT tools, ranging from electronic health records to advanced artificial intelligence algorithms, are reshaping the way medical professionals collect, analyze, and interpret diagnostic information.

The integration of digital solutions into diagnostic processes has opened new opportunities for enhancing accuracy, reducing human error, facilitating remote assessments, and optimizing resource allocation. Technologies such as machine learning, telemedicine, and mobile health applications are enabling faster and more accessible diagnostics, especially in underserved or remote areas.

This article aims to explore the role of ICT in the medical diagnostic process, analyzing its current applications, benefits, and challenges. Furthermore, it provides insights into future trends and the potential of these technologies to revolutionize diagnostic practices within modern healthcare systems.

Materials and Methods

This study is based on a comprehensive review and analysis of existing literature, case studies, and empirical data related to the application of information and communication technologies (ICT) in medical diagnostics. The research methodology includes both qualitative and quantitative approaches to evaluate the effectiveness, accessibility, and integration of various ICT tools in clinical settings.

Primary sources of data were obtained from peer-reviewed journals, medical databases (such as PubMed, Scopus, and ScienceDirect), and official health organization reports. Additionally, case studies from healthcare institutions that have implemented ICT-based diagnostic solutions were analyzed to assess real-world outcomes.

The technologies examined include artificial intelligence (AI) for image analysis, machine learning algorithms for predictive diagnostics, electronic health records (EHRs) for data management, and telemedicine platforms for remote consultation and diagnosis. The selection criteria for sources included relevance to the research topic, publication within the last 10 years, and proven academic or clinical credibility.

The collected data were categorized and thematically analyzed to identify key trends, benefits, limitations, and emerging patterns in the use of ICT in diagnostics. This methodological approach ensures a structured and evidence-based understanding of the role of ICT in transforming diagnostic practices in modern medicine.

Results and Discussion

The analysis of the collected data reveals that the integration of information and communication technologies (ICT) into medical diagnostics has led to notable improvements in diagnostic accuracy, speed, and accessibility. Among the most impactful tools are artificial intelligence (AI) algorithms, which have demonstrated high precision in image-based diagnostics such as radiology and dermatology. Machine learning systems, when trained on large datasets, can detect patterns and anomalies that may not be immediately visible to human clinicians.

Telemedicine platforms have also played a significant role, especially during the COVID-19 pandemic, by enabling remote consultations and diagnostic services. These systems have expanded access to healthcare for patients in rural or underserved regions, reducing the need for physical visits and improving the efficiency of medical services.

Electronic health records (EHRs) have streamlined the process of storing, sharing, and retrieving patient information, contributing to more informed and coordinated diagnostic decisions. Integration of EHRs with AI tools has further enhanced the ability to generate predictive diagnostics and personalized treatment plans.

However, the study also highlights several challenges. These include issues related to data privacy and security, the need for standardized protocols across healthcare systems, and the digital divide that limits access to ICT-based diagnostics in low-resource settings. Furthermore, the reliance on complex algorithms requires continuous validation and oversight to ensure ethical and accurate outcomes.

Overall, the findings suggest that while ICT offers tremendous potential to transform medical diagnostics, its successful implementation depends on addressing technical, ethical, and infrastructural challenges. Continuous innovation, proper training for medical personnel, and strong regulatory frameworks will be essential to fully realize the benefits of these technologies in healthcare diagnostics.

Conclusion

The study concludes that information and communication technologies (ICT) are playing an increasingly vital role in advancing the field of medical diagnostics. Through the integration of artificial intelligence, machine learning, telemedicine, and electronic health records, healthcare providers are now better equipped to deliver accurate, timely, and patient-centered diagnostic services.

These technologies not only improve the precision and efficiency of diagnostic procedures but also enhance accessibility, particularly for remote and underserved populations. However, successful implementation requires addressing several challenges, including data security, technological infrastructure, and the need for professional training and standardized practices.

In summary, ICT holds transformative potential in the diagnostics domain, with the capacity to significantly enhance healthcare outcomes. Continued investment in innovation, education, and policy development will be crucial to harnessing the full benefits of digital technologies in modern medical diagnostics.

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TELEMEDICINE THE ROLE OF INFORMATION TECHNOLOGY IN REMOTE MEDICAL SERVICES

Annotation*: This article examines the global impact of telemedicine as a rapidly evolving field in modern healthcare, driven by advancements in information technologies. Telemedicine has emerged as a transformative solution for delivering medical care remotely, bridging the gap between patients and healthcare providers regardless of geographic location. The study explores key types of telemedical services—such as teleconsultation, telediagnosis, and remote patient monitoring—and analyzes the technological tools that enable them, including video conferencing platforms, electronic health records (EHRs), mobile health applications, and Internet of Things (IoT) devices. The article highlights the benefits of telemedicine, including increased accessibility, cost-effectiveness, and improved patient outcomes, while also addressing global challenges like digital infrastructure disparities, data security concerns, and legal regulations. The paper concludes by emphasizing the role of telemedicine in shaping the future of healthcare on a global scale through the integration of digital innovations.*

Keywords:*Telemedicine, Remote healthcare, Information technologies, Digital health, Teleconsultation, Electronic health records (EHR), mHealth, IoT in healthcare, Health informatics, Global health technologies*

Introduction

In recent years, the integration of information technologies into healthcare has revolutionized the way medical services are delivered, leading to the rapid development of telemedicine. As a response to increasing demands for accessible and efficient healthcare, especially highlighted during the COVID-19 pandemic, telemedicine has emerged as a vital tool for providing medical consultations, diagnosis, and monitoring at a distance. By leveraging digital communication technologies such as video conferencing, mobile health applications, and electronic health records, telemedicine has extended the reach of healthcare systems beyond traditional clinical settings.

Globally, telemedicine is transforming the healthcare landscape by addressing geographical barriers, reducing costs, and enhancing patient engagement. While its adoption is accelerating in both developed and developing countries, the implementation of telemedical solutions also brings forth challenges such as data security, digital literacy, and regulatory compliance.

This paper aims to explore the technological foundation of telemedicine, its various forms and applications, and the global impact it has on healthcare delivery. Through a comprehensive analysis, the article highlights how telemedicine, empowered by digital innovations, is reshaping modern healthcare and offering new opportunities for equitable access to medical services worldwide.

Materials and Methods

This study is based on a comprehensive review and analysis of academic literature, official reports, and global health databases related to telemedicine and the use of information technologies in healthcare. Peer-reviewed articles from journals indexed in databases such as PubMed, Scopus, and Web of Science were examined to gather insights into the evolution, implementation, and effectiveness of telemedicine systems worldwide.

The methodology employed in this research is qualitative and descriptive in nature. The study utilizes content analysis to identify key technological components, applications, and challenges associated with telemedicine across different healthcare settings. Comparative analysis was also conducted to evaluate the telemedicine strategies used in various countries, considering factors such as infrastructure, legal frameworks, and adoption rates.

In addition, statistical data from the World Health Organization (WHO), the World Bank, and other international health bodies were used to support the discussion on global trends and disparities in access to telemedical services. The study does not involve primary data collection but synthesizes secondary sources to provide a holistic understanding of telemedicine's role in modern healthcare.

Results and Discussion

The analysis of global telemedicine trends reveals that the adoption of digital health solutions has significantly accelerated in recent years, particularly in response to the COVID-19 pandemic. Countries with well-established digital infrastructures, such as the United States, Canada, the United Kingdom, and parts of Western Europe, have rapidly scaled up their telemedicine capabilities. Common applications include remote consultations, virtual triage, chronic disease management, and mental health services.

One of the key findings is that video conferencing and mobile health (mHealth) applications are the most widely used tools in telemedicine, providing real-time communication between patients and healthcare providers. Electronic health records (EHRs) and Internet of Things (IoT) devices, such as wearable health trackers, have further enhanced the quality of remote care by enabling continuous patient monitoring and data sharing.

Despite its benefits, the implementation of telemedicine is not without challenges. The digital divide remains a significant barrier in low- and middle-

income countries, where limited internet access and low digital literacy hinder widespread adoption. Moreover, data privacy, cybersecurity concerns, and the lack of unified international regulations continue to pose serious issues for global telehealth systems.

Nevertheless, case studies from countries like India, Brazil, and South Africa demonstrate that innovative, low-cost telemedicine models can improve healthcare access even in resource-limited settings. The evidence suggests that with appropriate investment in digital infrastructure, education, and policy-making, telemedicine can play a transformative role in achieving global health equity.

In conclusion, the results support the idea that telemedicine, when integrated with robust information technology systems, offers a scalable, efficient, and patient-centered approach to modern healthcare. However, for its full potential to be realized globally, coordinated efforts are needed to address technological, legal, and socioeconomic barriers.

Conclusion

Telemedicine, supported by the rapid advancement of information technologies, is fundamentally reshaping the global healthcare landscape. This study has highlighted how digital tools—such as video conferencing platforms, mobile health applications, electronic health records, and IoT-enabled devices—have enabled healthcare systems to overcome geographical and logistical barriers, delivering timely and efficient medical services to patients worldwide.

The findings suggest that telemedicine enhances healthcare accessibility, reduces operational costs, and improves patient outcomes, particularly in remote or underserved areas. However, its global implementation is still challenged by issues related to digital infrastructure, cybersecurity, legal regulations, and health literacy.

To fully harness the benefits of telemedicine, coordinated efforts are required among governments, healthcare institutions, technology providers, and regulatory bodies. Investment in digital infrastructure, clear data protection policies, and training for both providers and patients are essential for sustainable and equitable telehealth systems.

In the future, telemedicine will likely become an integral part of hybrid healthcare models, blending physical and virtual care for more personalized, efficient, and inclusive health services. As technology continues to evolve, telemedicine holds significant promise in advancing universal health coverage and closing the global health equity gap.

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CONCEPT OF FAITH IN SPIRITUAL VALUES

Abstract: *Young generation spiritual values in the spirit education, scholars wise, wise words, thoughts appreciate, learn , in life application the youth opinion and worldview expands. Today's youth is the future foundation . So, them every side by side mature, perfect, patriotic, peace of the country and prosperity on the way selfless future children as upbringing necessary.*

Keywords: *Faith, pride, piety, compassion, purity, honesty, religion, humanitarianism, patriotism, internationalism.*

Spiritual values - people spirituality and moral in appearance relevant society members to educate them spiritual perfection to provide service to do values system expressive understanding Spiritual values when you say , human upbringing and in its maturity important to the point owner , society and person spirituality uplifting , thinking in development incomparable importance profession which value shapes is understood . (For example, customs, traditions, Motherland love, self people and nationality respect do, his parents respect, peace and harmony to keep and etc.) Faith person spiritual in the world which one on the way decision don't find his condition mainly is one. That is, believer man's word with work one It will be like this. human every what in the circumstances own word and in the treaty If like that If not, conscience in agony will remain and He does not forgive himself. So conscience, honesty, purity, truthfulness, honesty, generosity, kindness, justice, people, Motherland lover with to live only faith whole only for people characteristic is a virtue. Religious faith with together human experience, knowledge because of to the surface arrived secular faith there is also .

Worldly faith content world and about man last two and a half thousand year during discovery done scientific-philosophical knowledge , work of the people collected life experience , social memory , various activities , traditions , customs , traditions and at the root of them knowledge organization Worldly of faith core from humanity consists of and its in your composition incoming elements , edges , aspects very It is different. Humanity when our people far history during various from tests passing by polish found coming and only positive virtues in the form of respected spiritual - moral values if we understand will be Humanity idea our people whole life style , customs and to his traditions incomparably rich oral and written to creativity , classic our literature and to our art sink gone if we say exaggeration it won't be . Worldly faith people correct out of the way to go directed spiritual values is a system . Faithful to be the essence modesty , modesty , sweet words , honesty and justice , honor , conscientiousness , loyalty , hard work , generosity , kindness like moral from values consists of that we will see . So , faith perfect human mature

spiritual virtues is a set . Unbelief and dishonesty , unbelief , bottom to the roads walk , morality , manners , humanity rule and to the requirements compliance not to do . “ Being human easy , human to be difficult ", " Father child don't be , human child be ”, “ To yourself good what you haven't seen to another both good "Don't see ", " Bad" own " in pain , in good health " in wisdom our ancestors honored humanity values one just a little bit reflection did only .

Religious and secular of faith in essence a little difference if both of them content and formal formation the same. For example religious in faith everyone the thing creator breed To God , worldly in faith and to humanity , true humanity accent given. Their every both both actually person really , initials with subscriber human as upbringing to find directed . A man of faith belongs to others to the heart annoyance not give , but people to the heart light , light they share them only good, kind to actions teaches. That separately emphasize need , colonialism and repression , dependence and subordination years our people thousand years during composition found both religious , too secular-moral to faith squeegee blow given . Far away from the past strength take again and again prosperity found coming religious faith theoretical in terms of communist ideology extreme enemy so announcement practical in terms of ruthless persecution and oppression under taken , various roads with insulted In faith loyal was thousands believers , first of all priests physically no as sent Worldly faith and ominous classism to the criterion put in falsified, broken interpretation was done . As a result so take so much so that even the most close those who were born that is parents , brothers , sisters everyone – all one - briga ashidi enemy as was put . Seventy year during our people both religious , too secular in faith contrary inhuman in spirit being brought up came Our nation people between own to faith against time to the oppressors flattery in short language with your heart, your heart with of action otherwise , in faith contrary moral defects gradually gone . Religious and secular faith disabled to the situation was quoted .

Faith human so much in his life solution doer position yes , without it, it is true human both, morality also , so society both it won't be . Faithful to be aspiration difficult it's hard . Everyone is a believer difficulty and to deprivations conscious in a way bearable gave in case honesty , honesty , generosity . goodness glorification and to evil against struggle , patriotism , patriotism like virtues to incarnate movement does and to him achieves He is spiritual wealth and beauty material abundance not at all victim People for to live , their heart inappropriate not to hurt someone about betrayal not to do believer human life is a program . So , faith human life and to the activity basis will be religious and secular spiritual and moral values is a system . Faith only historical just a value not , but the present in our day both human to perfection without a doubt profitable be spirituality because our view necessary .

Uzbekistan independence to strengthen contribution to the couple, citizens faith independence at work dedication , nationalism , patriotism , internationalism , bright to the future trust , our country to their symbols loyalty , national pride and pride feelings in itself education , business , entrepreneurship at work new moral values in itself invisible from verb The believer is perfect human It will be . Faith

perfect humanity expressive all spiritual virtues includes . Our contemporary happened people like you the youth believer as as follows our description can : faith , own exactly to the advice of owner patriotic , humanitarian, pious, honorable, honorable , shameless , conscientious , caring, honest humble , honest and clean , correct word like virtues is the owner .

Next in years spiritual to values attention increased . After all, spiritual values our country independence of our people his will strong which gives him strength main from factors is one Our people from centuries to centuries inheritance left coming spiritual values far historical in progress formed and developed They came . three thousand from the year more the era embodied our people civilization created Ours spiritual our values to this civilization organ related and they are our nation shaped place and to the motherland respect , generations in memory of loyalty to adults respect , in dealing courtesy , modesty, respect like many in concepts is expressed . Spiritual in our values of the world other to their people unlike customs, pictures, ceremonies and traditions many meets . Former system under the circumstances spiritual values issue many in cases out of consideration outside left gone was .

Independence because of real spiritual our values , theirs society social , spiritual and educational in life place and the importance of understanding , great of our ancestors spiritual , scientific legacy mastering our children spiritual values based on raising adult delivery , that 's priceless wealth preservation and enriched in case next for generations flawless eye transmission opportunity was created . This and spiritual values eternity and continuity provides .

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THE IMPACT OF DIGITAL TECHNOLOGIES AND METAVERSE ON THE GLOBAL ECONOMY

Abstract: *the paper explores the revolutionary impact of digital technologies and the metaverse on the global economy. Through a review of shifting paradigms in industries, we analyze how innovations such as blockchain, augmented reality, and virtual experiences are reshaping business models, consumption patterns, and economic structures. The merge of digital technologies with the experiential engagement offered by the metaverse is creating new opportunities and challenges for the economy. This study aims to highlight how these innovations are transforming economic growth, labor patterns, and the business future.*

Keyword: *digital technologies, metaverse, global economy, blockchain, augmented reality, economic growth, consumer behavior.*

Introduction

Over the past few years, the world has experienced the fast-paced evolution of digital technologies that have begun to redefine the form of the global economy. Technologies such as virtual immersive experiences, blockchain, and artificial intelligence, known as the metaverse, not only revolutionize traditional business models but also create entirely new industries. The metaverse is a blurring of physical and digital realms in which economic activity in virtual space becomes a reality. Its effects are grave on how economies grow, consumers interact, and corporations conduct business. Understanding these effects offers key insights into the future of international business, labor dynamics, and economic relationships.

Main part Digital technologies have grown increasingly prominent in various dimensions of the world's economy over recent years. The technologies have fundamentally transformed business operations, consumer relations, and offerings of goods and services. The rise of the metaverse—a collective virtual environment that involves augmented reality (AR), virtual reality (VR), and the internet—has further driven these changes, holding out new potential and posing significant issues. This article discusses the multi-faceted impact of digital technologies and the metaverse on the global economy, trends, challenges, and future implications.

One of the most prominent impacts of digital technologies is productivity enhancement across industries. Automation and artificial intelligence (AI) have transformed traditional manufacturing and service-based occupations, enabling firms to achieve greater efficiency and lower operational costs. To illustrate, AI-powered analytics software allows companies to forecast demand more accurately, streamline supply chains, and customize products to meet the requirements of

consumers. As a result, businesses can respond more quickly to shifting markets, create more economic growth, and enhance competitiveness on the global front.[22]

The metaverse continues to build upon these technologies by providing immersive environments that facilitate new levels of collaboration and interaction. Businesses are now exploring virtual realms in order to hold meetings, training, and product development, which boosts workers' engagement and creativity. By bridging geographical distances, the metaverse enables companies to become international, tap pools of talent with diversity, and unleash cross-border collaboration. This is not only extending productivity but also boosting innovation as companies unleash the power of diverse groups all around the globe. Moreover, the emergence of blockchain technology is redefining how transactions are conducted and stored. Blockchain, a decentralized, secure data storage system, introduces transparency and trust, which are essential in this economy. Supply chains are being revolutionized by blockchain, facilitating traceability and verification of transactions, eliminating fraud and increasing efficiency. In the financial industry, smart contracts and cryptocurrencies are transforming payment systems and reducing intermediation requirements, thus transaction costs. All such developments can potentially make economic inclusivity stronger by extending easier access to financial services by underbanked groups across the globe. However, the rapid merge of digital technologies and the metaverse is not without its challenges that must be addressed. One such major challenge is the impact of employment. As automation and AI technologies usurp routine work, workers may lose their jobs in the absence of appropriate retraining or support. In addition, there is a growing need for regulatory frameworks that balance consumer protection, data privacy, and innovation. Policymakers must handle these subtleties such that the benefits of digital change are equitably shared, while its adverse consequences on employees are reduced. Consumer behavior is also being profoundly transformed by digital technologies and the metaverse. With customers engaging with brands in virtual spaces, attitudes towards personalization, immersion, and interactivity have shifted. Companies employing digital technology to provide engaging customer experience can create stronger brand loyalty and sell more products. Social commerce, wherein social media sites enable direct buying, shows how consumer interactions have evolved. The metaverse presents yet another dimension of engagement, where businesses are able to produce virtual events, allow customers to try products within augmented surroundings, and establish customer loyalty community programs.

In a report titled *The Potential Global Economic Impact of the Metaverse*, an Analysis Group team quantified the potential economic impact of the metaverse if it were to evolve like prior successful technologies in terms of the rate of adoption by users and the impact on GDP. The researchers selected mobile technology as an appropriate analog because of similarities to the metaverse in the way it combined

[22] Filipova, I. A. (2023). Creating the metaverse: consequences for economy, society, and law. Journal of digital technologies and law, 1(1).

existing and nascent innovations to fundamentally alter global technological and economic landscapes.

The metaverse is still in its formative stages but is envisioned to comprise an expansive network of digital spaces enabled by developing technologies such as augmented reality (AR), virtual reality (VR), and mixed reality (MR). The Analysis Group team utilized research on previous breakthrough technologies to draw inferences about the potential adoption process and economic impact of the metaverse. In addition, the study team drew from academic literature on the development cycles for innovative technologies and on publicly available data for the deployment and adoption of mobile technology over a number of years to assess direct, indirect, and catalytic or stimulative impacts on factors important for GDP, including job creation, business growth, and economic development.

The researchers concluded that the metaverse has the potential to contribute 2.8% to global gross domestic product (GDP) in the 10th year after the start of its adoption. If adoption began in 2022, for example, the metaverse could contribute $3 trillion to global GDP in 2031.[23]

Virtual economies expand as they are revolutionizing global trade and commerce. Online buying experiences are being driven by digital technologies that fuel e-commerce, which has been booming. The growing importance of digital currencies and acceptance of cryptocurrencies in commerce indicate a shift toward new forms of exchange. Such a shift has compelled traditional financial institutions and firms to adapt, creating a hybrid economic environment where electronic and physical markets are becoming integrated. Global dissemination of the digital economy enables emerging markets to compete on a global scale, providing new windows of opportunity for growth and development. In the future, the integration of digital technologies and the metaverse in the global economy is going to expand, driving an age of unprecendent change and expansion. Businesses investing in unlocking their implications and actively seeking digital transformation will be poised to take advantage of this new landscape. The success of this new economy will, however, be conditioned on collaboration among technology providers, businesses, governments, and universities to ensure that society is able to handle innovation responsibly. In summary, the metaverse and digital technologies have had a substantial impact on the world economy, reshaping productivity, market conditions, and customer behavior.[24] As much as these innovations offer tremendous opportunities for growth and innovation, they also carry challenges that should be planned and addressed. Embracing this future into a technology-driven future, it will be essential to adapt to these changes in order to harness their full potential as well as mitigate the risks inherent in them. The ongoing growth of the

[23] https://www.analysisgroup.com/Insights/publishing/the-potential-global-economic-impact-of-the-metaverse/#:~:text=The%20researchers%20concluded%20that%20the,to%20global%20GDP%20in%202031.

[24] Allam, Z., Sharifi, A., Bibri, S. E., Jones, D. S., & Krogstie, J. (2022). The metaverse as a virtual form of smart cities: Opportunities and challenges for environmental, economic, and social sustainability in urban futures. Smart Cities, 5(3), 771-801.

digital economy provokes us to reframe traditional economic paradigms and aim for a more dynamic and inclusive global market.

Conclusion

The metaverse and digital technologies will revolutionize the international economy by facilitating new business models and enhancing customer experiences. As businesses change to address such shifts, they will have to navigate the challenges and opportunities of this digital transformation. The findings of this revelation underscore the urgency of stakeholders embracing these technologies early enough to prepare themselves for the soon-to-arrive innovations that will characterize economic interactions across the world. This will enable them to be in a position to tap into the vast potential that lies in the evolving digital world.

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O‘ZBEKISTONDA MELIORATSIYA ISHLARI: HOLAT, MUAMMOLAR VA KELAJAK ISTIQBOLLARI

Annotatsiya. *Ushbu maqola O‘zbekistonda melioratsiya ishlarining joriy holati, asosiy muammolar va kelajak istiqbollarini tahlil qiladi. Sug‘oriladigan yerlarning sho‘rlanishi, suv samaradorligining pastligi va eskirgan infratuzilma kabi muammolar yoritilgan. Davlat dasturlari, xalqaro loyihalar va zamonaviy texnologiyalarning joriy etilishi tahlil qilinib, muammolarni hal qilish bo‘yicha amaliy takliflar keltirilgan. Maqola qishloq xo‘jaligi barqarorligini ta’minlash uchun melioratsiya sohasidagi islohotlarning muhimligini ta’kidlaydi.*

Kalit so’zlar: *melioratsiya, sug‘oriladigan yerlar, tuproq sho‘rlanishi, suv samaradorligi, zamonaviy sug‘orish, tomchilatib sug‘orish, drenaj tizimlari*

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IRRIGATION WORKS IN UZBEKISTAN: STATUS, CHALLENGES, AND FUTURE PROSPECTS

Abstract*: This article analyzes the current state, main challenges, and future prospects of irrigation works in Uzbekistan. Issues such as soil salinization, low water efficiency, and outdated infrastructure are highlighted. State programs, international projects, and the introduction of modern technologies are examined, with practical recommendations provided for addressing these challenges. The article emphasizes the importance of reforms in the irrigation sector to ensure the sustainability of agriculture.*

Keywords*: irrigation, irrigated lands, soil salinization, water efficiency, modern irrigation, drip irrigation, drainage systems*

O‘zbekiston Markaziy Osiyoning qurg‘oqchil hududida joylashgan bo‘lib, qishloq xo‘jaligi iqtisodiyotning asosiy tarmog‘i hisoblanadi. Sug‘oriladigan 4,3 million gektar yer oziq-ovqat xavfsizligini ta’minlashda muhim rol o‘ynaydi. Biroq, meliorativ holatning yomonlashuvi, iqlim o‘zgarishi, infratuzilmaning eskirganligi va noqulay siyosatlar tufayli jiddiy muammolar mavjud.

2024-yil holatiga ko‘ra, sug‘oriladigan yerlarning 48% sho‘rlangan, shundan 0,8 million gektari kuchli zararlangan. Suv resurslarining 90% qishloq xo‘jaligiga

yo‘naltiriladi, asosiy manbalar Amudaryo va Sirdaryo hisoblanadi. Sug‘oriladigan yerlarning holati mintaqalar bo‘yicha sezilarli farq qiladi.

Eng ko‘p sho‘rlangan hududlar:

- Qoraqalpog‘iston (68%): Amudaryo suvining kamayishi va yaroqsiz drenaj tizimlari.
- Xorazm (52%), Buxoro (47%), Farg‘ona (32%): Suv noto‘g‘ri taqsimoti, drenaj muammolari va eskirgan sug‘orish usullari.

Hosildorlik 1990-yillarga nisbatan sezilarli kamaygan:

- Paxta – 25%, g‘alla – 26%, kartoshka – 27% ga pasaygan.

Sho‘rlangan yerlar hajmi 1991-yildan 2024-yilgacha 75% ga oshgan.

Asosiy sabablar:

- An’anaviy sug‘orishda suvning 55-60% yo‘qoladi.
- Drenaj tizimlarining 55% ishlamaydi.
- Suvdagi tuzlar tuproqni sho‘rtob qiladi.

Suv resurslaridan foydalanish samaradorligi O‘zbekistonda past darajada qolmoqda. An’anaviy sug‘orish usullarida suvning katta qismi bug‘lanish yoki tuproqqa singib ketish orqali yo‘qotiladi. Zamonaviy tomchilatib sug‘orish texnologiyalari faqat 12% yerlarda qo‘llanilmoqda, bu global o‘rtacha ko‘rsatkichdan (25%) ancha past.

Sug‘orish tizimlarining 60% dan ortig‘i betonlanmagan va eskirgan holatda. Magistral kanallarning aksariyati 1960-1980-yillarda qurilgan bo‘lib, ularning samaradorligi sezilarli darajada pasaygan. Nasos stansiyalari va boshqa muhim infratuzilma ob’ektlari ham yangilanishga muhtoj.

Iqlim o‘zgarishi Amudaryo va Sirdaryo daryolaridagi suv oqimining kamayishiga olib kelmoqda. 2024-yilgi ma’lumotlarga ko‘ra, Amudaryo suvining yillik oqimi 1990-yillardagi ko‘rsatkichlardan 15% ga kamaygan. Bu suv tanqisligini yanada kuchaytirmoqda.

“Yerlarni meliorativ holatini yaxshilash” dasturi (2020–2030):

- $3,2 mlrd sarmoya, 1,1 mln gektarda drenaj tiklash, 500 ming gektarda zamonaviy sug‘orish joriy qilish.

2024-yilda:

- 250 ming gektarda drenaj ta’mirlandi,
- 80 ming gektarda tomchilatib sug‘orish o‘rnatildi.

Xalqaro tashkilotlar ham O‘zbekistonning melioratsiya sohasiga katta hissa qo‘shmoqda. Quyida asosiy loyihalar keltirilgan:

Loyiha nomi	Moliyalashtiruvchi	Mablag‘	Hudud
"Smart Water"	Jahon banki	380 mln. $	Farg‘ona vodiysi
"CAWEP"	UNDP	120 mln. $	Qashqadaryo viloyati
"Sug‘orish modernizatsiyasi"	Osiyo Taraqqiyot Banki	250 mln. $	Xorazm viloyati
"Suv resurslari boshqaruvi"	Germaniya GIZ	50 mln. $	Surxondaryo viloyati

Ushbu loyihalar zamonaviy texnologiyalarni joriy etish, suv tejamkor tizimlarni rivojlantirish va fermerlarning malakasini oshirishga qaratilgan.

Tomchilatib sug‘orish tizimlari suv sarfini 40-50% ga kamaytirishi mumkin. Masalan, Farg‘ona viloyatidagi “Smart Water” loyihasi doirasida 20 ming gektar paxta maydonlarida tomchilatib sug‘orish joriy qilingan bo‘lib, hosildorlik 15% ga oshgan. Bunday tizimlar nafaqat suvni tejaydi, balki tuproq sho‘rlanishini ham kamaytiradi.

Suv resurslarini boshqarishda sun’iy intellekt (AI) va masofadan monitoring tizimlari tobora ommalashmoqda. Masalan, Qashqadaryo viloyatida “CAWEP” loyihasi doirasida dronlar va sun’iy yo‘ldosh tasvirlari yordamida tuproqning sho‘rlanish darajasi va suv taqsimoti real vaqtda kuzatilmoqda. Bu resurslardan samarali foydalanishni 20% ga oshirdi.

Tuproqning meliorativ holatini yaxshilash uchun quyidagi agro-meliorativ usullar qo‘llanilmoqda:

- Ekin almashinuvini joriy etish: Paxta monokulturasidan voz kechib, don, sabzavot va dukkakli ekinlarni ekish.
- Organik o‘g‘itlar: Tuproq unumdorligini oshirish uchun kimyoviy o‘g‘itlar o‘rniga bio-o‘g‘itlardan foydalanish.
- Yer haydash texnikasi: Chuqur shudgor va tuproqni yumshatish orqali suvning singishini yaxshilash.

Dr. Alisher Xodjaev (Markaziy Osiyo suv resurslari instituti): “Agar zamonaviy texnologiyalar va suv tejamkor usullar keng joriy qilinmasa, 2050-yilga kelib sug‘oriladigan yerlarning 60% ishlamay qolishi mumkin. Shu bilan birga, fermerlarning bilim va ko‘nikmalarini oshirish muhim ahamiyatga ega.”

Professor Gulchehra Rahimova (Toshkent irrigatsiya va qishloq xo‘jaligini mexanizatsiyalash instituti): “Suv resurslarini boshqarishda raqamli texnologiyalar va xalqaro tajriba muhim o‘rin tutadi. O‘zbekiston bu sohada jiddiy yutuqlarga erishmoqda, ammo moliyaviy va institutsional islohotlar zarur.”

O‘zbekistonda melioratsiya sohasidagi muammolar mamlakatning qishloq xo‘jaligi va iqtisodiy barqarorligiga jiddiy tahdid solmoqda. Muammolarni hal qilish uchun quyidagi choralar zarur:

1. Infratuzilmani modernizatsiya qilish: Sug‘orish kanallarini betonlash, yangi nasos stansiyalari qurish va drenaj tizimlarini ta’mirlash.

2. Zamonaviy texnologiyalarni joriy etish: Tomchilatib sug‘orish, raqamli monitoring va sun’iy intellekt asosidagi tizimlarni kengaytirish.

3. Fermerlar malakasini oshirish: Zamonaviy sug‘orish usullari va agro-meliorativ choralar bo‘yicha o‘quv dasturlarini kengaytirish.

4. Xalqaro hamkorlikni mustahkamlash: Jahon banki, UNDP va Osiyo Taraqqiyot Banki kabi tashkilotlar bilan loyihalarni kengaytirish.

5. Qonunchilikni takomillashtirish: Suv resurslaridan foydalanishni tartibga soluvchi qonunlarni kuchaytirish va noqonuniy suv sarfini oldini olish.

O‘zbekistonning melioratsiya sohasidagi muammolarni hal qilish nafaqat qishloq xo‘jaligi samaradorligini oshiradi, balki mamlakatning iqtisodiy va ekologik barqarorligini ta’minlashga xizmat qiladi.

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FANLARNI RIVOJLANTIRISHDA RAQAMLI RESURSLARDAN SAMARALI FOYDALANISH

Annotatsiya*:Ushbu maqolada zamonaviy ta’lim jarayonida fanlarni o‘qitishda raqamli resurslardan foydalanishning ahamiyati, usullari va samaradorligi tahlil qilinadi. Raqamli texnologiyalar fanlarni chuqurroq o‘zlashtirish, talabalarning qiziqishini oshirish va mustaqil ta’lim olish ko‘nikmalarini rivojlantirish imkoniyatlarini beradi. Maqolada ta’limda qo‘llaniladigan eng samarali raqamli platformalar, dasturlar va usullar ko‘rib chiqiladi, shuningdek, ularni qanday qilib o‘quv jarayoniga integratsiya qilish mumkinligi haqida tavsiyalar keltiriladi.*

Kalit so‘zlar:*Raqamli ta’lim, elektron resurslar, interaktiv darsliklar, onlayn platformalar, virtual laboratoriyalar, sun’iy intellekt, adaptiv o‘qitish, blended learning, MOOCs, gamifikatsiya.*

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EFFECTIVE USE OF DIGITAL RESOURCES IN DEVELOPING SUBJECTS

Annotation:*This article analyzes the importance, methods and effectiveness of using digital resources in teaching subjects in the modern educational process. Digital technologies provide opportunities for deeper mastery of subjects, increasing students' interest and developing independent learning skills. The article considers the most effective digital platforms, programs and methods used in education, and also gives recommendations on how to integrate them into the educational process.*

Keywords: *Digital education, electronic resources, interactive textbooks, online platforms, virtual laboratories, artificial intelligence, adaptive learning, blended learning, MOOCs, gamification*

Kirish

Zamonaviy texnologiyalarning tez rivojlanishi ta’lim sohasida ham katta o‘zgarishlarni keltirib chiqarmoqda. Raqamli resurslar – elektron darsliklar, virtual

laboratoriyalar, interaktiv testlar, onlayn kurslar va sun’iy intellekt asosidagi o‘quv dasturlari – fanlarni o‘qitish samaradorligini oshirishda muhim rol o‘ynaydi.

1. Raqamli Resurslarning Ta’limdagi Ahamiyati

- **Qulaylik va kirish imkoniyati** – har qanday vaqt va joyda bilim olish.
- **Interaktivlik** – videolar, simulatsiyalar, testlar orqali faol o‘rganish.
- **Individual yondashuv** – adaptiv dasturlar orqali har bir talabaning darajasiga moslashuvchanlik.
- **Real vaqtda baholash** – testlar, avtomatik tuzatish tizimlari.

2. Fanlarni O‘qitishda Qo‘llaniladigan Raqamli Resurslar

2.1. Elektron Darsliklar va Onlayn Kurslar

- **Khan Academy, Coursera, edX** – bepul va pullik yuqori sifatli kurslar.
- **OpenStax, CK-12** – ochiq manbali elektron darsliklar.

2.2. Virtual Laboratoriyalar va Simulyatsiyalar

- **PhET Interactive Simulations** – fizika, kimyo, biologiyada interaktiv tajribalar.
- **Labster** – virtual laboratoriyalar orqali ilmiy eksperimentlar.

2.3. Sun’iy Intellekt va Adaptiv O‘qitish

- **Duolingo, Socratic (Google AI)** – moslashtirilgan o‘quv dasturlari.
- **ChatGPT, Gemini** – sun’iy intellekt yordamida savollarga javob olish.

2.4. Gamifikatsiya va O‘yinlashtirilgan Ta’lim

- **Kahoot!, Quizizz** – raqamli testlar va o‘yinlar orqali bilimni mustahkamlash.
- **Minecraft: Education Edition** – matematika, tarix va dasturlashni o‘yin orqali o‘rgatish.

3. Raqamli Resurslardan Samarali Foydalanish Usullari

Aktiv metodlardan foydalanish – talabalarni loyihalar, diskussiyalar va virtual eksperimentlarga jalb qilish.
Aralash (blended) ta’lim modeli – an’anaviy va raqamli usullarni uyg‘unlashtirish.
Doimiy yangilanish – yangi dasturlar va platformalarni kuzatib borish.
Monitoring va baholash – LMS (Learning Management Systems) tizimlari yordamida progressni kuzatish.

Raqamli resurslar — bu axborotni raqamli formatda taqdim etuvchi, uni tezkorlik bilan uzatish, saqlash, tahrirlash va baham ko‘rish imkonini beruvchi vositalardir. Ta’lim jarayonida quyidagi raqamli vositalardan keng foydalaniladi:

- **Elektron darsliklar va PDF manbalar:** matnli, grafik va multimedia elementlari bilan boyitilgan materiallar.
- **Video darslar (YouTube, EDU-kanallar):** murakkab tushunchalarni vizual tushuntirish uchun ideal.

- **Virtual laboratoriyalar (PhET, Labster):** fizik, kimyo va biologik tajribalarni simulyatsiya qilish.
- **Interaktiv ilovalar va o‘yinlar (Kahoot, Quizizz, Duolingo):** o‘quvchilar bilimini mustahkamlash uchun.
- **Platformalar (Google Classroom, Moodle, EduPage):** dars materiallarini boshqarish, topshiriqlarni tekshirish va baholash imkonini beradi.

Xulosa

Raqamli resurslar fanlarni o‘qitish jarayonini qiziqarli, samarali va individual qiladi. Biroq, ularning to‘g‘ri tanlanishi va metodik jihatdan qo‘llanilishi muhimdir. Kelajakda sun’iy intellekt, virtual reallik va katta ma’lumotlar tahlili ta’limda yanada katta rol o‘ynashi kutilmoqda.

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KICHIK MAKTAB YOSHIDA MATEMATIK TASAVVURLARNI SHAKILLANTIRISHNING NAZARYASI VA METODIKASI

Annotatsiya.*Maktabgacha ta'lim yoshidagi bolalarda matematik tasavvurlarni shakllantirish nazariyasi va metodikasiga bag'ishlangan. vaqtni idrok qilish, bolalaming maktabga tayyorlik darajasiga qo'yiladigan minimal talablar, oilada va maktabgacha ta'lim tashkilotlarida olib boriladigan metodik ishlami rcjalashtirish kabi masalalarga oid ma'lumotlarga keng o'rin bcrilgan. Bolalarda matematik tasavvurlarni shakllantirish mashg'ulotlarida foydalaniladigan yangi pedagogik texnologiyalar, didaktik o'yinlar ko'rsatib o'tilgan*

Kalit so'zlar: *maktabgacha tarbiya, miqdor, son, narsalarning kattaliklari, geometrik figuralar, matematik bilim, ta'limiy faoliyatlar, matematik tushunchalami shakllantirishning mexanizmi.*

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THEORY AND METHODOLOGY OF FORMING MATHEMATICAL IMAGINE IN CHILDREN

Abstract. *It is devoted to the theory and methodology of forming mathematical ideas in preschool children. A wide range of information is given to issues such as time perception, minimum requirements for children's readiness for school, planning methodological work in the family and preschool educational organizations. New pedagogical technologies and didactic games used in classes on the formation of mathematical ideas in children are shown.*

Keywords: *preschool education, quantity, number, sizes of objects, geometric figures, mathematical knowledge, educational activities, mechanism for the formation of mathematical concepts*

Kirish. Maktabgacha ta'lim yoshidagi bolalarga ta'lim berish jarayonini takomillashtirishda bo'lajak pedagoglarning ilmiy va uslubiy ta'minlanganligi, ularning kasbiy tayyorgarligi asosiy masalalardan sanaladi. Ayniqsa, bolalarda matematik tasavvur va bilimlarni rivojlantirish ularning intellektual jihatdan yetuk insonlar bolib ulg'ayishida o'ziga xos o'ringa ega. Matematik bilimlar bolalarga, ular nimani bilib olganliklari va nimaning uddasidan chiqa olishlarini hisobga olgan holda. aniq t'zim va ketma-ketlikda bcriladi maktabgacha ta'lim tashkiloti xodimlari

- tarbiyacbilarni maktabgacha yoshdagi bolalarda ilk matematik tasavvurlarni shakllantirish va rivojlantirishning ilmiy hamda metodik asoslari bilan tanishtirishdan iborat. ana shu ilmiy-nazariy asoslar, bu jarayonda qo‘llanishi maqsadga muvoliq bo'lgan zamonaviy ta'lim texnologiyalari, didaktik o‘yinlar. usul va vositalar masalasi yoritildi. Ushbu o’quv qo'llanm a maktabgacha ta’lim yoshidagi bolalarda matematik tasavvurlarni shakllantirish nazariyasi va metodikasiga bag’ishlangan. Turli yosh guruhidagi bolalarda matematik tasavvurlarni shakllantirish ta’limining asosiy didaktik tamoyillari, bolalarda miqdoriy tasavvurlarni rivojlantirish, ilk va maktabgacha yoshdagi bolalarda predmetlar miqdorini idrok qilish, esda olib qolish va taqqoslashning o‘ziga xos xususiyatlari, sanash faoliyatining rivojlanish bosqichlari, vaqtni idrok qilish, bolalarning maktabga tayyorlik darajasiga qo'yiladigan minimal talablar, oilada va maktabgacha ta’lim tashkilotlarida olib boriladigan metodik ishlarni rejalashtirish kabi masalalarga oid ma’lumotlarga keng o‘rin berilgan. Bolalarda matematik tasavvurlarni shakllantirish mashg’ulotlarida foydalaniladigan yangi pedagogik texnologiyalar, didaktik o‘yinlar ko'rsatib o‘tilgan.

Bolalarning matematik tushunchalami muvaffaqiyatli o‘zlashtirishi, ularning idrokim. ya'ni sensor tuyg'ularini o’stirish bilan bevosila bog'liqdir. L'mumkishtinsh va abslraktlashtirish qobilivali predrr'.etlarning xususijatlarir.: ur;k:!ash va shu xususi\allarga qarab mazkur predmc'Jarni bir- biriga taqqoslash hamda gumhlarga ajratish asosida o‘sib boradi. Shuning uchun bola maktabga borguniga qadar unda matematik tasavvurlarni shakllantirish uchun maktabgacha ta'lim tashkilotlarida barcha o'quv-tarbiya ishlari bir-biri bilan uzviy bog‘liq ravishda ish olib boriladi. Fan-texnika nihoyatda rivojlanayotgan bugungi davrda bolalarning turli sohalardagi tajribalarni sodda holda va ulardan amaliyotda foydalana olishi uchun ularning maktabgacha yoshdan kerakli va zarur bilimlarni egallashlariga jiddiy e’tibor berishimiz lozim.

Ayniqsa, matematik bilimlar bola hayotida, uning har tomonlama katta ahamiyatga ega. Ilk matematik tushunchalarning qanchalik aniq va mustahkam bo'lishi bolalar tafakkurining, ulardagi analiz va sintez, mantiqiy fikrlash, xulosa ehiqarish jarayonlarining kuchli bo'lishini tu’minlaydi. Bizga ma'lumki, sodda matematika orqali maktabgacha yoshdagi bolalar son va sanoq, geometrik shakllar. vaqt va fazo haqida, kattaliklar haqida bilimlarni oladilar. Bu bilimlar yordamida bolalar idrok qilinadigan obyektlarning xususiyatlarini analiz va sintez qilish, taqqoslash va umumlashtirishning eng sodda bog‘lanishlari hamda ular orasidagi munosabatlarni tushunib oladilar

. Xorazmiy saroyda barakali ijod qilib, Sharqning astlabki akademiyasi («Bayt ul-Hikmat») «Donolar uyi» da faol ishtirok etdi. Xorazmiy juda ko‘p asarlar yaratgan bo'lsa ham, ularning hammasi bizga yetib kelmagan. Xorazmiyning arifmetika va algebraga oid asarlari matematika tarixida yangi davrni o‘rta asrlar matematikasi davrini boshlab berdi, hamda matematikaning keyingi asrlardagi taraqqiyotiga beqiyos hissa qo‘shdi.O‘quvchilar algebra, algoritm so‘zlarini ko'p eshitishgan. Algebra matematikaning katta bir bo’limi, algoritm esa hozirgi zamon hisob texnikasining, matematikasining asosiy termini. Algebra, algoritm so‘zlari

matematik, astronom va geograf, hozirgi zamon algebrasining otasi Al-Xorazmiy nomi bilan bog'liqdir. Uning «Al-jabr valmuqobala» risolasi keyinchalik Yevropada «algebra» deb ataladigan bo‘ldi. Ayni shu asar tufayli Al-Xorazmiy nomidan XII asr boshlarida «algoritm» termini paydo bo‘ldi. Xorazmiyning matematikaga oid shoh asarlari Fapb va Sharq xalqlari tillariga tarjima qilinib, ko‘p asrlardan buyon qo‘llanma sifatida xizmat qiladi. Xorazmiyning «Hind hisobi va sonlari haqida», "‘Al-Jabr”, «Arifmetika», «Marmar soat haqida», «Yer surati», “Tarix kitobi”, «Yahudiv eralari va bayramlari» haqida asarlari, ayniqsa, ma’Ium va mashhurdir. Uning «Ziji» nomli asari dastlabki astronomik asar sifatida Sharqdagina emas, Garbda ham shu fan rivoji uchun katta xizmat ko‘rsatgan.

Matematik bilimlar bolalarga ma’lum tizim va izchillikda berilishi, bunda yangi bilim kamroq miqdorda, ya’ni bolalar o‘zlashtirib oladigan darajada boMishi kerak. Shuning uchun ham bir vazifa bir qancha mayda qismlarga bo‘linib, ular birin-ketin o‘rganib boriladi. Tarbiyachi har bir yosh guruhining dasturi qanday tuzilganini bilishi lozim. Bu unga o‘z guruhidagi bolalarning matematikaga doir bilim darajalarini aniqlash uchungina emas, balki maktabgacha ta’lim yoshidagi bolalarda boshlang‘ich matematik tasaw urlarni o ‘stirish yuzasidan olib boriladigan barcha ishlar tizimida har bir ta’limiy faoliyatning qanday muhim rol o‘ynashi va o‘rin egallashini ko‘z oldiga keltirish uchun ham imkon beradi. Zero, ta’lim-tarbiyani izchil rivojlantirish ona Vatanga sadoqatli, bilimli, chinakam komil insonlarni voyaga yetkazishning asosiy shartidir Ilk matematik tushunchalar bolalarning yoshiga mos tarzda qiziqarli qilib o'ri-atilsa. samarali natijalarga erishiladi. Matematik tushunchalami rivojlantirishda bo‘lgan barcha izlanishlar quyidagi ikki asosiy vo'nalishda olib borilmoqda:

Maktabgacha ta'lim yoshidagi bolalarni o'qitish o‘ziga xos xususiyatlarga ega. Maktabgacha ta'lim yoshida yechilishi kerak bo‘lgan vazifalar hal qilinmasa, maktabda o‘qitish muvaffaqiyatli bo‘lmaydi. Bu vazifalardan biri aniq bilimlar va tafakkur usullaridan abstrakt bilim va usullarga o'tishdan iborat. Bu xil o'tish saviyasi, ayniqsa, matematika o‘qitish uchun zarurdir. Bunday saviyaning bo'lmasligi yoki yetarli bo‘lmasligi ikki tomonlama qiyinchilikka olib keladi. Bir tomondan, maktabgacha ta'lim yoshidagi bolalar ko‘pincha maktabga mavhum matematik usullarni egallagan holda keladilar, bularni bartaraf qilish juda qiyin bo‘ladi.

Tekshirishlar shuni ko'rsatmoqdaki, maktabgacha yoshdagi bolalarga matematika o‘qitishda o‘tish saviyasi mazmuni quvidagilardan iborat: Birinchidan, shunday faoliyat va masalalarni o'zlashtirish kerakki. ularda matematik operatsiyalarni qomlashning zarurligi bolalarga yaqqol ko’rinib turadi. Bu, bir tomondan, bolaning amaliv faoliyati bilan bevosita bog'liq (tenglashtirish. taqqoslashga oid) masalalar, ikkinchi tomondan. ularga shunday shartlar kiritiladiki. bunda mazkur masalalarni matematik vositalardan foydalanmay turib (masalan, fazoda ajratib qo'yilgan ikki to‘plamni amalda tenglashtirish) amalga oshirish mumkin bo'lmaydi.

Foydalanilgan adabiyotlar ro`yxati

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THE IMPORTANCE OF IMPROVING WATER QUALITY

Annotation: *This article analyzes the importance of improving the quality and enhancing the safety of drinking water supplied to the population. It emphasizes the need for a set of measures to implement advanced technologies and water purification methods, including studies of the composition of pollutants specific to each water supply source. A comparative analysis of the quantitative composition of the main classes of organic substances in the water of open reservoirs during winter and flood periods is presented.*

Keywords: *chlorination, health, vocational, education, nutrition, lifestyle, aldehydes and ketones, quality improvement*

Introduction:

Currently, almost two-thirds of Uzbekistan's population receives water from surface water sources. State sanitary-epidemiological control authorities report that in 50% of cases, drinking water supplied from these sources, even after treatment and disinfection, fails to meet certain parameters of the national standard. This is due to the increasing degradation of the water composition in surface sources, which are also commonly used as natural receivers of treated or untreated wastewater [4]. As a result, water is heavily polluted with heavy metals, detergents, pesticides, biogenic elements, phenols, organochlorine compounds, and other substances.More than 2,000 organic compounds have been identified in natural waters, including over 700 in drinking water [2].

According to the literature, a number of compounds identified in drinking water have experimentally established carcinogenic and mutagenic activity. These include substances entering the water from industrial and agricultural sources, as well as compounds formed during water treatment [3]. Chlorination of surface waters containing even small amounts of organic compounds produces chlorine-containing toxic, mutagenic and carcinogenic substances. It is assumed that 20 to 35 out of 100 cases of cancer (mainly colon and bladder) are caused by the consumption of chlorinated drinking water [1].

Purpose of the study

The goal of this study is to examine the composition of organic compounds in the river in the area influenced by the open Republican water intake. These studies served as a preliminary stage in a set of activities aimed at improving technology and introducing effective methods for purifying water from various pollutants, including anthropogenic ones.

Materials and methods

The analysis of organic substances in the water was carried out using gas chromatography–mass spectrometry based on methods patented under numbers 420

and 456 by the Environmental Protection Agency [7,8]. The first method is designed to analyze volatile compounds and involves purging volatile components of the analyzed mixture with helium and adsorbing them on silica gel, followed by desorption into the chromatograph column. The second method, used for analyzing non-volatile substances, involves extraction of organic substances with methylene chloride, drying over sodium sulfate, evaporation, and analysis of the concentrate by gas chromatography–mass spectrometry. Chemical analysis was performed using Perkin-Elmer instruments and equipment.

Results and discussion

According to the research conducted during the winter and flood observation periods at the operating open water intake point in, about 230 organic compounds of diverse chemical nature were identified. Considering repeatability, 175 organic compounds were detected in the water during the winter period and 144 during the flood period.

For data systematization, all identified organic compounds were grouped into classes. The figure shows that in the winter period, halogenated aromatic and terpene hydrocarbons, as well as alcohols and ethers, predominated. In the flood period, aliphatic hydrocarbons, aldehydes, and ketones were dominant. The total concentration of organic compounds in winter water was 11.65 mg/L, and in flood water — 10.85 mg/L.

To assess the health risks of the detected organic compounds, they were compared with sanitary standards in effect in the Republic [5]. Of the 230 identified organic compounds, 13 substances exceeded the maximum permissible concentration (MPC), while 165 substances had no established sanitary-hygienic MPC standards.

Table 1. Composition of Organic Compounds Exceeding the MPC of Sanitary-Hygienic Standards

Organic compound	MPC for water bodies of domestic and drinking water use, mg/L	Winter period		Flood period	
		Concentration of pollutants, mg/L	the frequency of exceeding the maximum permissible concentration	Concentration of pollutants, mg/L	Concentration of pollutants, mg/L
Acetaldehyde	0,2	0,08	-	0,08	-
1,2-Dichlore etilen	0,0006	0,008	13,0	0,008	13,0
Chloroform	0,06	0,035	-	0,2	3,3
Diethyl ether	0,3	0,6	2,0	-	-
Nytrometan	0,005	0,035	7,0	-	-
Cyclohexan	0,1	0,2	2,0	-	-
Chlorobenzene	0,02	0,035	1,8	-	-
1,3-D chlore benzene	0,002	0,003	1,5	-	-
Benzaldehyde	0,003	0,008	2,6	0,003	1,0
Heptanol	0,005	-	-	0,008	1,6
Phenol	0,001	0,003	3,0	0,003	3,0
Dyphenil	0,001	0,003	3,0	0,003	3,0
Dimethyl Phthalate	0,3	0,008	-	0,008	-
Di-n-butyl phthalate	0,2	1,4	7,0	0,4	2,0

Table 1 presents data on the qualitative and quantitative composition of organic compounds in water that exceed the maximum permissible concentrations (MPC) of sanitary-hygienic standards. As shown in the presented data, in the river

water during the winter period, the MPC of pollutants was exceeded 10 times by 1.5 to 13 times for the following substances: acetaldehyde, diethyl ether, nitromethane, cyclohexane, chlorobenzene, 1,3-dichlorobenzene, benzaldehyde, phenol, diphenyl, and di-n-butyl phthalate. During the flood period, the normative content of organic substances in the water exceeded the MPC by a factor of 1 to 13 for 7 substances: 1,2-dichloroethylene, benzaldehyde, heptanol, phenol, diphenyl, and di-n-butyl phthalate.

A special group was allocated for the identified organic compounds that, according to the list of the Environmental Protection Agency, belong to the class of particularly hazardous pollutants. The data show that in the winter water sample, the standards were exceeded for 4 substances: 1,2-dichloroethylene (by 13 times), chlorobenzene (by 1.8 times), 1,3-dichlorobenzene (by 1.5 times), and di-n-butyl phthalate (by 7 times). In the flood water sample, the standards were exceeded for 3 substances: 1,2-dichloroethylene (by 13 times), chloroform (by 3.3 times), and di-n-butyl phthalate (by 2 times).

The conducted studies have shown that under the conditions of constantly increasing anthropogenic pressure, the water in open water bodies...

Practice has shown that existing traditional water treatment facilities and the classic technologies used in them are no longer capable of ensuring the required drinking water quality.

Conclusion: All this points to the need to reconsider the range of existing water treatment technologies and to introduce methods capable of neutralizing the growing anthropogenic factor while ensuring the safety and harmlessness of drinking water supplied to the population. In this context, deep water purification can be achieved through the use of oxidizing agents, such as ozone, and sorbents, commonly activated carbons. The implementation of these methods requires further research and testing.

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INVESTIGATION OF THE CHARACTERISTICS OF FRUIT PRESERVATION TECHNOLOGY IN AN IONIZED ENVIRONMENT

Abstract: *This article investigates the fundamental principles and technological processes of fruit preservation in an ionized environment and their effects on fruit quality and shelf life. Research shows that ionizing radiation significantly reduces microbial contamination, slows down the rotting process, and preserves the external appearance and beneficial properties of fruits. The article also analyzes the efficiency, energy-saving aspects, and environmental safety of storage in ionized conditions. The results obtained are of great importance for improving long-term fruit preservation technologies.*

Keywords *(in English): Ionization, fruit preservation, food safety, microflora, radiation technology, shelf life, environmental safety.*

Introduction

Characteristics of Fruit Preservation Technology in an Ionized Environment.

The effect of an ionized air environment on fruit products is investigated. After being harvested from the parent tree, fruits continue to undergo biological processes. Nutrients within the fruit are gradually consumed, and water evaporates over time. As a result, the fruit deteriorates — losing its commercial appearance, flavor, and aroma. The slower the metabolic processes in the fruit, the better it can be preserved.

The main objective of long-term fruit preservation technology is to minimize the fruit's respiration rate. Ionization of the surrounding air creates an ion layer on the surface of the fruit, which in turn slows down metabolic activity.

A significant portion of fruit mass consists of water — approximately 70–80%. Grapes, apples, and other fruits also contain essential nutrients such as sugars, organic acids, aromatic, and volatile compounds. During storage, for instance in apples, the carbohydrates gradually break down into simpler forms. Sugars undergo hydrolysis and transform into more soluble forms. As a result of ongoing physiological and biochemical processes, the nutrient content in fruits decreases over time.

Water vapor continuously evaporates from the surface of the apple. Additionally, water is consumed during the respiration process. These factors

collectively reduce the fruit's storage stability. In cases where the fruit surface is mechanically damaged, the protective skin is compromised, creating favorable conditions for the development of pathogenic microorganisms.

Air ions, when applied under cooling conditions or in a natural environment, contribute significantly to better preservation of fruits. These ions exert both direct and indirect effects on fruit quality.

The **direct effect** of air ions is characterized by the formation of an ion layer on the surface of the fruit, which influences the ion exchange processes associated with metabolism. This process helps retain moisture, nutrients, and aroma in the fruit more effectively.

The **indirect effect** of ionized air is associated with the suppression of fruit diseases and the inhibition of microbial growth.

The outcomes of fruit preservation are evaluated based on certain criteria after a predetermined storage period — including mass loss, waste quantity, and the proportion of marketable product.

When fruits are intended for long-term storage, their preservation depends on a complex set of factors, such as the microclimatic conditions, ionization regimes, the type and physiological state of the product, as well as the type and capacity of the packaging containers.

To study the process of fruit preservation in an ionized air environment, experiments were conducted on commonly cultivated late-season apple varieties (such as Semerenko) and the Toifi grape variety under the conditions of the Republic of Uzbekistan. Research was carried out in a storage facility located at the "Malek" farm, affiliated with the Farmers Association of the Sirdaryo district, Sirdaryo region. The fruits were stored in chambers of a fruit storage warehouse with a capacity of 50 tons.

Fruits, particularly apples, were stored over extended periods in different types of containers. The air in the storage facility was ionized under various regimes using both positive and negative ions. In the naturally ventilated storage environment, the air temperature ranged from t = 8 to 10°C, with relative humidity maintained at 75%. Ventilation was provided by opening doors and windows.

Parameters such as air temperature and humidity, electrode voltage, volumetric concentration of air ions, ionization device operation time, and duration of fruit exposure were regularly monitored. The concentration of air ions was measured using a САИ-ТГУ-66М-type air ion counter. In addition, the number of air ions was assessed based on the magnitude of discharge current. A correlation between the ionizer's discharge current and air ion concentration was established, and the ion concentration was determined using a complete set of ionizer characteristics [8,9].

Figure 1 illustrates the technological scheme of a needle-type ionizer operating in combination with a ventilation system.

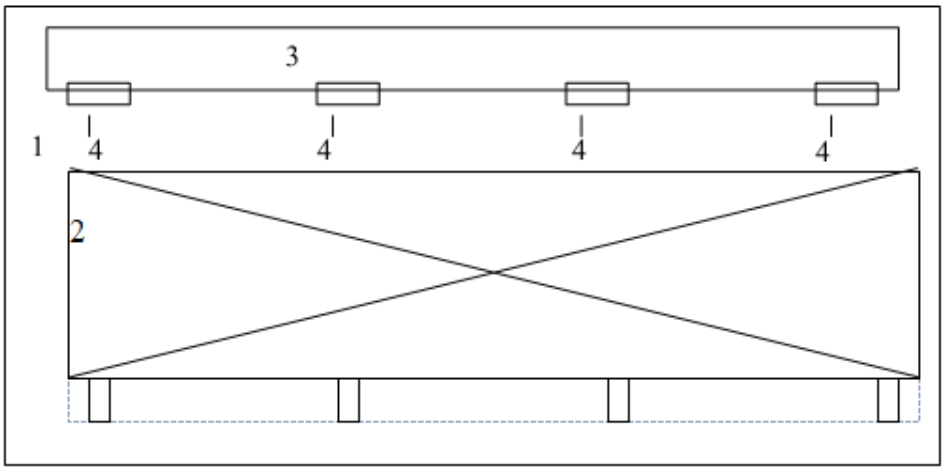

Figure 1. Technological scheme of a needle-type ionizer operating in combination with a ventilation system:

The system consists of the following components: 1.Storage chamber, 2. Stored products, 3. Ventilation and cooling system, Electroionization device.

In the experiments, a corona-discharge air ionization device was employed.

MAIN PART

Prior to placing the products into storage, the chamber was pre-ionized for 6 hours with an ion concentration of 5×10^{13} ions/m³. During storage, air ionization was carried out using both positive and negative ions at a concentration of 10^{12} ions/m³ for intervals of 2, 4, and 6 hours.

Apples and grapes were stored in wooden crates. The apples were hand-picked, sorted, pre-cooled, and then placed into the storage chamber. The products were stored in a cold storage room maintained at 0°C and 90% relative humidity. The fruit storage facility was equipped with a 50-ton capacity cooling system, and the fruits were also stored in a 10-ton capacity chamber with a naturally regulated microclimate.

The ion concentration levels and treatment durations were determined based on preliminary experimental studies, ensuring the complete elimination of pathogenic microorganisms without adversely affecting product quality. During apple storage, the most common contaminant is mold fungi [10]. In the course of the study, the effect of air ions on the viability of the fungus Penicillium glaucum (Ps.gl), commonly found on apples, was investigated. The findings provided valuable data for determining the parameters of electro-technological treatment.

For the experiments, a separate 0.5 m³ chamber was designated within the fruit storage facility. Petri dishes containing Ps.gl cultures were placed inside these chambers and subjected to various ion concentrations and exposure durations. It is known that ion concentrations ranging from 10^3 to 10^{11} ions/m³ can stimulate the biological activity of living organisms. However, higher concentrations may inhibit or completely suppress metabolic processes.

Air ions were applied at concentrations ranging from 0.5×10^{12} to 10^{13} ions/m³. Similar trials were conducted using apples intentionally infected with Ps.gl fungi.

The apples were first washed in cold water, then inoculated with the fungus and placed into the storage chambers. The air temperature was maintained at 0°C with 90% relative humidity. Infected apples were stored under varying environmental conditions for 20 days, and the resulting data were analyzed..

SOLUTIONS

1. As the concentration of air ions increases, the growth of microorganisms is significantly inhibited.
2. To achieve a noticeable antimicrobial effect, the volumetric concentration of air ions must reach at least 10^{12} ions/m³. For complete elimination of microorganisms, air ion treatment should be applied once a week for a duration of 1.5 to 2 hours (see Figure 2).

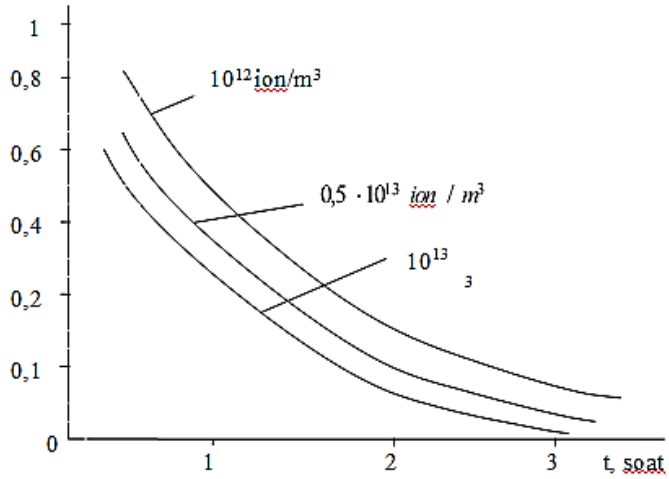

Figure 2. The influence index of microorganisms on the ionization dose in electrical ionization.

In the studies, the air was ionized with positive and negative ions, for which the polarities of the discharge electrodes were switched. The microorganisms (Ps. gl mold) were equally affected by both the "+" and "-" ions. The development of mold-forming bacteria on the fruit surface was halted. Based on the results of the above studies, the air ionization volume concentration was set at 10^{12}-10^{13} ions/m³, and the ionization time was determined to be 2-4 hours, repeated once a week in technological production experiments. In these conditions, the process of metabolism in the fruit slows down, and the loss of nutrients and moisture also decreases. The optimal ionization level for the preservation of fruit products was determined based on the long-term storage possibilities of their physicochemical and commodity-dietetic indicators, as well as the conditions ensuring no ozone formation..

The apples were placed for long-term storage in the following variants:

1. In fruit storage chambers equipped with a cooling system at a temperature of 0°C and humidity of 90%, the volume concentration of air ions was 10^{12} ions/m³; 0.5×10^{13} ions/m³, with a treatment time of 2-4 hours. Treatment was repeated once a week.
2. In a storage chamber without a cooling system, with the same ion concentration and treatment time.

Before placing the product in storage, the chambers were cleaned and treated with ionizers at maximum efficiency ($n=10^{13}$ ions/m³) for 6 hours. Then, 50 wooden boxes were placed in each storage chamber variant, stacked 5 boxes high, with 25 kg of apples in each box, totaling 1250 kg of apples in each variant for storage.

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Variants	Storage Regime		Ionization Regime		Storage Results %		
	t,^{0}C	γ,%	n,ion/m^3	τ,soat	Tovar mahsulot	chiqindi	Massa yo'qolishi
1			10^{12}	2	79	21	7
2	0	90	$0,5*10^{13}$	2	86	14	6
3			10^{13}	2	89	11	5,8
4			10^{12}	4	83	17	6,5
5			$0,5*10^{13}$	4	88	12	5,8
6			10^{13}	4	90	10	5,7
7	+(5 - 8)	75	-	-	72	28	9
8			-	-	64	36	10
9			-	-	70	30	9
10			-	-	79	21	9,5
11			-	-	83	17	9,2
12			-	-	86	14	9

The storage results were monitored every month. The apples were inspected, and the boxes were randomly selected and checked. Boxes with up to 10% loss were removed. At the end of the storage period, the chemical composition was determined, and organoleptic evaluation was conducted. The mass loss of the product (evaporated water amount) was determined by weighing the sample boxes and experimental batches (at the end of storage). The temperature and humidity of the fruit storage rooms were monitored using temperature and humidity sensors. The cooling system automatically maintained the microclimate in the room.

The overall result in each variant was determined based on the mass of the product placed for storage and the mass of the well-preserved product at the end of the storage period. According to the standard, when stored for 5-6 months, fruit products lose up to 6% of their mass. Losses may also occur due to fruit being infected with various microorganisms or decaying. Total waste should not exceed 10%. The status of the results after 6 months is presented in the table (Table 1). When placed in various containers, apples and grapes stored in wooden boxes with paper padding were observed to be well-preserved. The corners of the boxes were made 5-8 mm higher, ensuring that when the boxes were stacked, air gaps remained between them, allowing the air ions to reach the fruit. For mathematical processing of the storage results and determining optimal conditions, the following regression equation will be used.

$$Y=a_o+a_1x_1+a_2x_2+a_3x_3+a_{12}x_1x_2+a_{23}x_1x_2+a_{13}x_1x_3+a_{123}; \quad (1).$$

Here: y - experimental result, product quantity, % X1 - factor, volume concentration of air ions 10^{12} ions/m³ - 10^{13} ions/m³; X2 - treatment time, hours (up to 6 hours); X3 - air temperature of the storage chamber (0-10°C); a0, a1...a123 - regression coefficients, which are determined from the following expression:

In the experimental studies (Table 1), we determine the values of the regression coefficients based on the results obtained and get the following equation:

$$Y=79+2,44x_1+2,34x_2-6,4x_3-0,7x_1x_2+0,2x_1x_3+0,68x_2x_3-0,3x_1x_2x_3; \quad (2).$$

Without considering the interactions between the factors, the expression simplifies to the following form:

$$Y=79+2,44x_1+2,34x_2-6,4x_3 \quad (3).$$

It can be seen from this equation that the important factor in the process is the air temperature. Based on this, it is recommended to store fruit products for long periods only in storage rooms with cooling systems. In storage rooms without cooling systems, the product can be stored in good condition for up to 2 months.

By processing the mathematical model, optimal treatment regimes were determined in technological production experiments. Based on the subsequent results, the regression equation obtained takes the following form:

$$Y=84+4,2x_1+3,46x_2-2,44x_1x_2 \quad (4).$$

In this case, the fruit products in both the experimental and control variants were stored at the same temperature of 0-10°C, meaning that when the cooling regime was the same, the fruit products in the experimental variants were preserved in good condition, taking into account the electrotechnological effects. The optimal air ionization regime is 0.9×10^{13} ions/m³, with a treatment time of 4 hours. In this case, the product quality was y = 90%.

Conclusion

As a result of the studies, the requirements for the operating modes of the electroionizer were determined, meaning it must generate unipolar ions at a concentration of 10^13 ions/m³ in the storage chamber.

The experiments show that when air is ionized for storage, the losses of fruit products are reduced by 1.7 times, the product is preserved at 90% quality within 6 months, and water loss does not exceed 6%.

Automating technological processes improves the storage condition and quality indicators of fruit products. The yield of marketable products increases, and the storage process becomes human intervention-free. The stability of air conditions in the room is ensured, and the incidence of disease decreases.

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THE ROLE OF MICRO HYDRO POWER PLANTS IN ELECTRICITY GENERATION

Abstract: *This scientific article discusses the role of micro hydropower plants (small hydroelectric power stations) in electricity generation, their control systems, their role in voltage and frequency regulation, as well as the mechanisms of parallel connection to the grid, based on a scientific approach. The article presents control schemes developed based on semiconductor regulation elements, energy quality indicators, and the necessary calculation formulas for application in real systems. The paper concludes with scientific conclusions and practical recommendations.*

Keywords: *Micro HPP, renewable energy, semiconductor regulation, voltage stabilization, synchronization, grid integration, control system, electricity quality, automation, energy efficiency.*

Introduction

Micro Hydropower Plants (Micro HPPs) are small power hydropower facilities with capacities ranging from 1 kW to 100 kW. These plants are typically located in remote areas near mountainous regions and water sources, with their main advantage being their ability to provide independent, stable, and environmentally clean electricity. Currently, micro HPPs are widely used in developing countries, especially in areas far from the main power grid.

In Uzbekistan, the focus on micro HPPs is also increasing. According to the Ministry of Energy, more than 30 micro HPPs are planned to be constructed by 2024, with a total installed capacity of 3-4 MW. Micro HPPs are automated to meet the needs of consumers, and their installation is relatively inexpensive, easy to maintain, and designed for long-term use. Furthermore, they play a key role in the diversification of energy supply and the development of the local economy.

The quality indicators of electricity directly affect the reliability, stability, and efficiency of the energy supply. The main parameters that determine the quality of electricity produced by micro hydropower plants are as follows:

- **Voltage Stability (U):** Micro HPPs maintain the output voltage at the required level using automatic voltage regulation (AVR) systems. This is important for both household and industrial consumers.
- **Frequency Stability (f):** The generator must maintain the frequency around 50 Hz by ensuring a stable rotation speed. Mechanical governors or electronic speed control systems are used for this purpose.

- **Power Factor (cosφ):** The cosφ value in a micro HPP should be maintained in the range of 0.9–0.98, which improves energy efficiency and reduces the load on the grid.

For micro HPPs to produce high-quality electricity, a stable operating turbine-generator pair, a voltage regulation system, and a control system that can quickly adapt to variable loads are required.

Factors ensuring parallel operation with the grid Micro hydropower plants are operated in parallel with the centralized electrical grid in accordance with technical and safety requirements. The following conditions and factors are crucial for the operation of the system:

Synchronization Equipment: The voltage and frequency produced by the micro HPP must match the parameters of the central grid. For this, automatic synchronization modules (AVR + synchronizer) are used.

- Protection Systems: In the case of short circuits, overloads, or grid failures, protection relays must automatically disconnect the micro HPP from the grid (e.g., current relays, frequency, and voltage relay settings).

- Power Flow Coordination: It is important to control the power flow depending on whether the electricity is flowing from the micro HPP to the central grid or from the grid to the micro HPP. For this, step-up transformers and contactors are used.

- Automatic Control Systems: The operational status is monitored and necessary adjustments are made using SCADA, PLC, or other remote monitoring systems.

Additionally, to ensure parallel connection with the grid, it is essential to comply with the standards specified in technical documentation (e.g., GOST R 52719 or IEEE 1547). Figure 1. The functional diagram of the micro hydropower plant is presented.

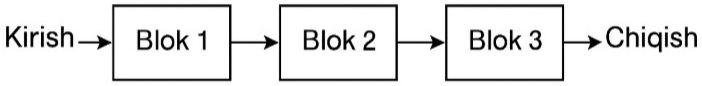

Figure 1. The functional diagram of the micro hydropower plant is presented.

Turbine Working Principle: The turbine converts the energy of the flowing water into mechanical energy. The water flow rotates the turbine blades, generating mechanical energy that drives the generator. Role in the grid it serves as the starting point for energy production in the grid. The turbine operates efficiently based on the water source and its flow rate.

Input: At this stage, the necessary data or external factors are provided to the micro HPP system. The inputs may include the following factors:

- Water flow and pressure (hydraulic energy)
- Load demand level
- Grid voltage and frequency status
- Control commands (from the operator or the automatic system)

Block 1: Energy Conversion (Converting Hydroelectric Energy to Electricity) In this block, the main function of the micro HPP — converting the mechanical energy of the water flow into electrical energy — is carried out.
Key components:

Hydroturbine: The water flow pressure generates rotational energy.

Electric Generator (synchronous/asynchronous): The rotational motion is converted into electrical energy.

Block 2: Signal Processing and Control (Automation Block) This block operates based on a microprocessor, PLC (Programmable Logic Controller), or PID/PI regulators that control the system.
Its functions include:

- Regulating output energy (voltage, frequency, power)
- Analyzing error signals (via feedback)
- Synchronizing with the grid
- AVR (Automatic Voltage Regulator) and compensation against oscillations

Block 3: Protection and Connection System (Grid Output) In this block, the electrical energy produced by the micro HPP is transmitted to the central grid or delivered to local consumers.
Key components:

- **Measurement Transformers** (current, voltage)
- **QF1 or other switches** (automatic disconnection)
- **Synchronization Scheme** (coordination with grid parameters)
- **Protection Relays** (overload, short circuit, frequency limits)

This block serves as the final control point necessary for safe and stable operation.

Output:

At the system's output, stable, high-quality electrical energy is delivered to the user or the grid. The following quality parameters are guaranteed:

- **Voltage:** 220/380 V
- **Frequency:** 50 Hz
- **Power Factor:** ≥ 0.9
- **Low Harmonic Distortion** (THD)

Figure 2: Updated control diagram with semiconductor regulation element

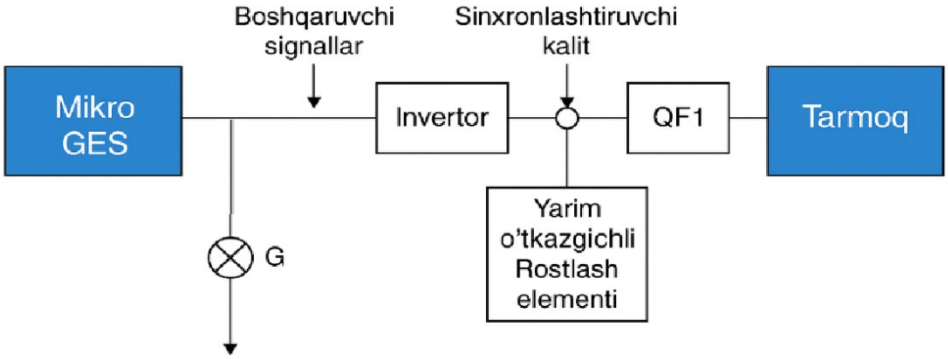

Figure 2: Updated control diagram with semiconductor regulation element

Output electrical power: $P=\eta \cdot \rho \cdot g \cdot Q \cdot H$

Here:

P — Electrical power *(W)*

η — Overall efficiency *(0.6–0.9)*

ρ — Water density *(≈ 1000 kg/m³)*

g — Gravitational acceleration (*9.81 m/s²)*

Q — Water flow rate (*m³/s)*

H — Water head *(m)*

$$P_{\text{loss}} = V_{\text{on}} \cdot I + R_{\text{on}} \cdot I^2$$

here:

V_{on}— Voltage drop in the open state (masalan, 1.2 V),

R_{on} — Voltage drop in the open state (masalan, 0.01 Ω),

I — Current passing through (A)

Temperature Rise:

$$\Delta T = P_{\text{loss}} \cdot R_{\theta \text{JA}}$$

here**:**

ΔT — Temperature rise of the semiconductor element (°C),

$R_{\theta \text{JA}}$— Thermal resistance (junction-to-ambient) [°C/W]

If $\Delta T + T_{\text{ambient}} > T_{\text{max allowable}}$ΔT+T$_{\text{ambient}}$>T$_{\text{max}}$ allowable, a cooling system is required.

Reactive power compensation:

If the micro HPP is connected to the grid, the power factor needs to be improved:

$$C = \frac{P}{\omega U^2} \cdot (\tan\varphi_1 - \tan\varphi_2)$$

here**:**

C — Compensation capacitor capacity (F),

$\omega = 2\pi f$ — Angular velocity (rad/s),

φ_1— Initial power factor angle,

φ_2 — Required power factor angle.

Conclusion:

Micro HPPs are an environmentally friendly and reliable energy source, and the efficiency of their automatic control systems can be further improved. The use of semiconductor elements ensures the system's speed and accuracy. In the future, the following can be recommended for micro HPPs:

- Technical support for local manufacturers
- Wide implementation of digital monitoring systems
- Standardization of protection and synchronization schemes adapted to the grid

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ANDIJON VILOYATIDA ASALARILARNING YUQUMLI VA INVAZIV KASALLIKLARINING EPIZOOTIK HOLATI

Annotatsiya: *Mazkur maqolada Andijon viloyati hududida asalarilarning yuqumli va invaziv kasalliklari bo'yicha epizootik vaziyat tahlil qilinadi. 2023–2024 yillardagi monitoring natijalari asosida asosiy xavfli kasalliklar (varroatoz, nosematoz, amerika chirishi va boshqalar) aniqlangan bo'lib, ularning tarqalish darajasi, xavflilik omillari va ularni bartaraf etish choralari ilmiy jihatdan asoslab berilgan.*

Kalit so'zlar: *Asalari, epizootik holat, varroatoz, invaziv kasallik, yuqumli kasallik, Andijon viloyati, nosematoz, veterinariya nazorati.*

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EPIZOOTIC SITUATION OF INFECTIOUS AND INVASIVE DISEASES OF BEES IN ANDIJAN REGION

Annotation: *This article analyzes the epizootic situation of infectious and invasive diseases of bees in the Andijan region. Based on the results of monitoring in 2023–2024, the main dangerous diseases (varroatosis, nosematosis, American rot, etc.) were identified, and their prevalence, risk factors, and measures to eliminate them were scientifically substantiated.*

Key words: *Bees, epizootic situation, varroatosis, invasive disease, infectious disease, Andijan region, nosema, veterinary control.*

Kirish. So'nggi yillarda asalarilarning ommaviy nobud bo'lishi global ekologik va iqtisodiy muammolardan biriga aylandi. Bu holatni asosan yuqumli va invaziv kasalliklarning keng tarqalishi bilan izohlash mumkin. O'zbekistonning boshqa hududlarida bo'lgani kabi, Andijon viloyatida ham ushbu muammo dolzarb bo'lib qolmoqda. Tadqiqotdan maqsad – viloyatda asalarilarning sog'lig'i holatini baholash, epizootik xavflarni aniqlash va ularni bartaraf etish choralari bo'yicha ilmiy asoslangan tavsiyalar ishlab chiqishdir.

Materiallar va metodlar

Tadqiqot 2023-yil fevral oyidan 2024-yil dekabr oyigacha davom etdi. Asosiy kuzatuvlar Marhamat, Baliqchi, Ulug'nor va Shahrixon tumanlaridagi 15 ta asalarichilik xo'jaliklarida olib borildi. Kasalliklar laboratoriya sharoitida aniqlanib, quyidagi metodlardan foydalanildi:

- Mikroskopik tekshiruv (Nosema spp., Varroa destructor)
- Bakteriologik analiz (P. larvae va M. plutonius)

- Molekulyar diagnostika (PCR asosida virus aniqlash)
- Statistik tahlil (SPSS orqali epidemiologik ko‘rsatkichlar)

Natijalar

Tahlil natijalariga ko‘ra, quyidagi asosiy epizootik ko‘rsatkichlar qayd etildi:

Kasallik turi	Aniqlanish holati (%)	Eng ko‘p uchragan tuman
Varroatoz	22%	Marhamat
Nosematoz	14%	Shahrixon
Amerika chirishi	3%	Ulug‘nor
Evropa chirishi	5%	Baliqchi
Virusli infeksiyalar	7%	Marhamat, Shahrixon

Bu natijalar asosida kasalliklar asosan bahor va kuz fasllarida avj olgani kuzatildi.

Muhokama

Varroatoz hali ham asosiy tahdid bo‘lib qolmoqda. U nafaqat asalari tanasiga bevosita zarar yetkazadi, balki boshqa virus kasalliklari uchun "eshik ochuvchi" rolini o‘ynaydi. Nosematoz esa, ayniqsa, bahor mavsumida asalari oilalarining kuchsizlanishiga olib kelmoqda. Bakterial kasalliklar kamroq uchragan bo‘lsa-da, ularning tarqalish potensiali yuqori bo‘lib, sanitariya choralariga amal qilinmasa, epidemiyaga sabab bo‘lishi mumkin.

Xulosa va tavsiyalar

Andijon viloyatida asalarilarning kasalliklari bo‘yicha epizootik holat o‘rtacha xavfli darajada, ammo muayyan tumanlarda yuqori ko‘rsatkichlar qayd etilgan. Shunga ko‘ra, quyidagi tavsiyalar ishlab chiqildi:

1. Har yili bahor va kuz mavsumlarida majburiy laborator tahlillarni o‘tkazish.
2. Varroatozga qarshi kurashda bioinsektitsid va organik kislotalardan samarali foydalanish.
3. Nosematozga qarshi Fumagillin asosidagi preparatlarni profilaktika maqsadida qo‘llash.
4. Veterinariya nazoratini kuchaytirish va asalarichilarni kasallik belgilari haqida doimiy o‘qitib borish.
5. Asalarilarni sog‘lom avlodlardan yetishtirish va genetik monitoringni yo‘lga qo‘yish.

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CHANGES IN THE PHYSICAL AND AGROCHEMICAL PROPERTIES OF LIGHT GREY SOILS DISTRIBUTED AROUND THE SHORTNEFT GAS FIELD

Annotation *This article analyzes changes in the physical and agrochemical properties of light gray soils distributed around the Shurtan gas and chemical industry zone. The studies determined soil density, mechanical composition, moisture capacity, pH, humus content, nutrient (N, P, K) concentration, salinity and heavy metal (Pb, Cd, Zn) content in the zones close to and far from the industry. The results show that the natural fertility properties of the soil are changing dramatically as a result of the activities of the Shurtan gas and chemical industry. Especially in areas close to the industry, soil structure deterioration, increased salinity and erosion of the humus layer are manifested as an environmental problem.*

Keywords*: Saline, light gray soils, physical properties, agrochemical changes, salinization, humus, heavy metals.*

Introduction The Shurtan gas and chemical industrial zone is one of the largest industrial complexes in the Kashkadarya region, and the processes of oil and gas extraction, processing and transportation have a negative impact on the soil and the environment. In particular, lands located in ecotone areas, such as light gray soils, are very sensitive to anthropogenic factors. This article scientifically analyzes the changes in physical and agrochemical properties of light gray soils around Shurtan and substantiates their assessment based on modern agrotechnologies.

Materials and methods (Methodology) Research work was carried out in three zones located within 1 km, 3 km and 5 km radii around the Shurtan NGSK. In each zone, samples were taken from soil layers at depths of 0–30 cm and 30–60 cm. The samples were analyzed according to the following criteria:

- Soil density (g/cm³) - cylinder method;
- Mechanical composition - pipette method;
- Moisture content and hygroscopic moisture – gravimetric method;
- pH (acidity) – potentiometric method;
- Humus content – by Tyurin method;
- Nitrogen (N), phosphorus (P_2O_5), potassium (K_2O) – by photometric and alemetric methods;
- Salinity – by electrical conductivity;
- Heavy metals – determined by atomic absorption spectrometry.

Statistical analyses were performed using MS Excel and STATISTICA programs.

Results

1. Soil density and structural changes:

The density of soils in the 1 km zone is 1.45 g/cm³, which is 10–15% higher than the natural norm. This densification worsens the physical properties of the soil and disrupts the water and air regime.

2. Moisture capacity and moisture retention properties:

In areas close to industry, hygroscopic humidity was 7.8%, while in remote areas it was as high as 9.3%. This indicates that the hydrological balance is being disrupted.

3. pH and salinity:

In areas 1 km away, the soil pH is around 6.3–6.5, indicating a relatively acidic environment. Salinity is 0.45–0.60%, approaching a level harmful to plants.

4. Humus and nutrient depletion:

The humus content in areas close to industry has been found to be between 0.6–0.9%, down from 1.2–1.5% in the natural state. Phosphorus and nitrogen content are also low, requiring agrotechnical soil fertilization.

5. Heavy metals:

Lead (Pb) and zinc (Zn) were found to be 2–3 times higher than the normative values in an area of 1 km. This poses a threat not only to plants, but also to soil microbiota and human health.

Discussion The results of the study show that the light gray soils around Shurtan are being degraded under industrial pressure. There are negative changes in the physical (density, moisture capacity, structure) and chemical (humus, nutrients, pH, salinity, heavy metals) properties of the soil. This not only reduces productivity, but also threatens the stability of ecological systems. Therefore, it is necessary to use bio-organic fertilizers, agro-ameliorative measures, and bioremediation technologies.

Conclusion As a result of anthropogenic loading on light gray soils around the Shurtan industrial zone:

- soil compaction;
- decreased humus content;
- increased salinity;
- increased heavy metal content.

This situation leads to a decrease in soil fertility and disruption of agroecosystems. To restore soil potential, it is necessary to strengthen environmental monitoring, expand agrotechnical measures, and control industrial waste.

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SOIL POLLUTION LEVELS AROUND THE SHURTAN OIL AND GAS UNITARY BRANCH ENTERPRISE

Annotation *This article analyzes the levels of pollution of soils around the Shurtan Oil and Gas Unitary Subsidiary Enterprise (NGSK) as a result of industrial activities. Based on literature and monitoring data, the concentrations of petroleum products and heavy metals (Pb, Cd, Zn), soil pH and salinity in zonal soils at distances of 1 km, 3 km and 5 km were studied. The analysis results show that the ecological risk is high in zones close to the industry. The article provides recommendations on the changing properties of the soil, sources of pollution and necessary environmental measures. The results of the study justify the need to introduce ecological monitoring and bioremediation technologies in the Shurtan region.*

Keywords*: Shurtan NGSK, soil pollution, petroleum products, heavy metals, environmental monitoring, bioremediation.*

INTRODUCTION The environmental situation in the industrialized regions of the Republic of Uzbekistan, especially in areas with developed gas and oil production sectors, is becoming a serious problem today. In particular, the ecological environment around the Shurtan Oil and Gas Unitary Subsidiary Enterprise (NGSK), located in the Shurtan region of the Kashkadarya region, is significantly damaged by human activity, especially soil resources. During the activities of the oil and gas industry, many harmful substances are released into the air, water, and, above all, into the soil.

Soil pollution, especially its saturation with oil products and heavy metals (lead, cadmium, zinc), has a serious impact on the agroecosystem. This, in turn, leads to a decrease in the quality and productivity of agricultural products. Some studies conducted in the Shurtan region today indicate the presence of soil pollution in this area. This article discusses the levels of pollution of soils around the Shurtan NGSK due to the oil industry, the main polluting components, and their negative impact on soil properties based on a literature analysis. The main purpose of the article is to study the ecological state of soils around the Shurtan region and assess them based on pollution criteria.

MATERIALS AND METHODS This scientific article was prepared in an analytical and theoretical direction, and the main sources were official information from the Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan, environmental observations conducted at the Shurtan gas and chemical industrial complex, as well as information from local and foreign scientific articles.

The following indicators were taken as a basis for assessing the level of soil pollution:

- The amount of petroleum products (hydrocarbons) - in mg / kg;
- The concentration of heavy metals (Pb, Cd, Zn);
- pH level;
- Changes in salinity and mechanical composition.

The analysis also compared the sanitary standards and maximum permissible concentration (MPC) indicators. The territorial analysis used data on zonal soil samples at a distance of 1 km, 3 km and 5 km from the Shurtan NGSC.

RESULTS Based on the analysis of the literature, it was found that the ecological state of the soil in the areas around the Shurtan NGSK is not uniform. The level of pollution is much higher in the areas closest to the enterprise. Zone within a radius of 1 km: The average content of petroleum products in this area is 2.5–3.1 mg/kg, which is 1.5–2 times higher than the maximum norm established by the sanitary standards of Uzbekistan. The color of the soil is darker, a specific odor is noticeable. The content of heavy metals: Pb – 45 mg/kg, Cd – 2.5 mg/kg, which is considered dangerous in terms of pollution. Zone within a radius of 3 km: The content of petroleum products is in the range of 1.2–1.8 mg/kg. Although the pH level is close to neutral, changes in the mechanical structure are noticeable. A decrease in organic matter and a decrease in microbiological activity are observed.

Zone within a radius of 5 km: Petroleum products are detected in trace amounts (0.4–0.9 mg/kg). Considering the geological characteristics of the Shurtan Valley, these indicators are considered relatively normal. However, in some places, heavy metals have been detected. Based on these data, it can be said that there is pollution in the soils around the Shurtan NGSK, which decreases with increasing distance. Also, pH and salinity levels are subject to industrial influence. As a result of the conducted studies, it was found that the pollution levels in the soils around the Shurtan NGSK decrease with increasing distance. The concentration of petroleum products in soil samples within a radius of 1 km was on average 1.5-2.1 mg/kg, which is 2-3 times higher than the standard value. In this area, the levels of heavy metals - especially lead (Pb) and cadmium (Cd) - also exceeded the ecological limits. Although the pollution level within a radius of 3 km has decreased relatively, it still remains higher than in the control zones. In soils at a distance of 5 km, the pollution is relatively low, and the impact of anthropogenic pressure has been observed to have significantly decreased there.

The pH value of the soil in the areas near the industry is around 6.2–6.4, and a slightly acidic environment has been observed. Salinity indicators are especially high in areas affected by technogenic wastewater, which negatively affects plant growth.

Also, changes in the state and species composition of the plant cover at the site have been observed, with the dominance of tolerant plant species. This indicates the impact of long-term pollution on natural flora and microbiocenoses.

DISCUSSION The results obtained have important commonalities when compared with other scientific studies. For example, the monitoring conducted by

Rasulov M. (2021) in the Shurtan industrial area also showed high concentrations of petroleum products and heavy metals. The reason for this is the insufficiently treated discharge of industrial waste into the environment, the inefficiency of filtration systems, and the reduced ability of the soil layer to self-recover.

In soils contaminated with petroleum products, plant growth slows down, the soil microflora changes, and the biological activity of the soil weakens. This also leads to the degradation of land resources and the acceleration of the erosion process.

In the current conditions, it is urgent to introduce bioremediation, phytoremediation, and microorganism-based cleaning methods in these areas. Also, a network of established laboratories is necessary to conduct regular environmental monitoring and assess the state of the soil.

CONCLUSION The level of soil pollution around the Shurtan oil and gas subsidiary is characterized by high levels of industrial activity. In areas close to the enterprise, high concentrations of petroleum products and heavy metals are detected. The level of pollution decreases with increasing distance, but traces of some pollutants are found even at a distance of 5 km.

This situation requires taking necessary measures to ensure regional ecological safety. Including:

- Establishing a permanent monitoring system;
- Using biological treatment methods;
- Controlling polluting sources;
- It is necessary to carry out reclamation work in the area.

One of the urgent tasks is to conduct research based on an integrated approach to studying the state of the environment and soil in the Shurtan region.

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TEXNOLOGIYA DARSLARIDA STEAM YONDASHUVI

Annotatsiya:*Ushbu maqolada texnologiya darslarida STEAM (Science, Technology, Engineering, Art, Mathematics) yondashuvining o‘rni va ahamiyati tahlil qilinadi. Mazkur yondashuv o‘quvchilarning kreativ fikrlashi, amaliy ko‘nikmalari va muammolarni hal etish qobiliyatini rivojlantirishga xizmat qiladi. Maqolada STEAM integratsiyasining afzalliklari, dars jarayonlariga qo‘llanish usullari va amaliy misollar keltirilgan.*

Kalit so‘zlar:*STEAM, texnologiya darslari, innovatsion ta’lim, integratsiya, kreativ fikrlash, muammoli vaziyat, amaliy mashg‘ulot*

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STEAM APPROACH IN TECHNOLOGY LESSONS

Annotation:*This article analyzes the role and importance of the STEAM (Science, Technology, Engineering, Art, Mathematics) approach in technology lessons. This approach serves to develop students' creative thinking, practical skills and problem-solving abilities. The article presents the advantages of STEAM integration, methods of application in lesson processes and practical examples.*

Keywords:*STEAM, technology lessons, innovative education, integration, creative thinking, problem situation, practical exercise*

Kirish

Bugungi kunda ta’lim jarayonlarida innovatsion yondashuvlarga bo‘lgan talab ortib bormoqda. Ayniqsa, texnologiya fanida o‘quvchilarning ijodkorligi, mustaqil fikrlashi va amaliy ko‘nikmalarini shakllantirish muhim ahamiyat kasb etadi. Shu nuqtayi nazardan, STEAM yondashuvi zamonaviy ta’lim jarayonida katta imkoniyatlar yaratadi.

STEAM yondashuvining mohiyati

STEAM atamasi beshta asosiy sohani o‘z ichiga oladi: Fan (Science), Texnologiya (Technology), Muhandislik (Engineering), San’at (Art) va Matematika (Mathematics). Bu yondashuv fanlararo integratsiya asosida o‘quvchilarni kompleks fikrlashga o‘rgatadi. Ayniqsa, texnologiya darslarida bu yondashuv o‘zining yuqori samaradorligini ko‘rsatadi.

Texnologiya darslarida STEAM yondashuvi

Texnologiya darslarida STEAM yondashuvini qo‘llash o‘quvchilarga:

- muammoli vaziyatlarda to‘g‘ri yechim topish;
- texnologik loyihalar yaratish;
- dizayn va muhandislik fikrlash asoslarini o‘zlashtirish;
- guruhda ishlash va o‘z fikrini asoslab bera olish;
- san’at elementlari orqali estetik didni rivojlantirish imkonini beradi.

Misol uchun, biror maishiy texnikani loyihalashda o‘quvchilar matematik hisob-kitoblar, fizik qonuniyatlar, dizayn tamoyillari va texnologik vositalarni uyg‘un holda qo‘llaydilar.

Dars jarayoniga STEAM integratsiyasi

STEAM yondashuvini darsga tatbiq etishda quyidagi bosqichlarga e’tibor qaratiladi:

1. **Muammo qo‘yish** – real hayotdan olingan vaziyat asosida topshiriq beriladi.
2. **Tadqiq qilish** – o‘quvchilar kerakli ma’lumotlarni izlaydi.
3. **G‘oya ishlab chiqish** – loyihaviy fikrlash asosida yechimlar taklif qilinadi.
4. **Yechimni yaratish** – amaliy jihatdan model yoki loyiha yaratiladi.
5. **Baholash va tahlil** – yakuniy mahsulot baholanadi va takomillashtirish yo‘llari muhokama qilinadi.

Darslarda steam yondashuvini qo‘llashda texnologiyalarning rol

1. **Dasturlash va Robototexnika**
   - Scratch, Arduino, LEGO Mindstorms kabi platformalar
   - Robototexnika loyihalari orqali muhandislik tamoyillari
   - Dasturlash asoslarini o‘rganish
2. **3D Modellash va Chop etish**
   - Tinkercad, Fusion 360 kabi dasturlar
   - Matematik shakllarni vizualizatsiya qilish
   - Muhandislik dizayn tamoyillari
3. **Virtual va Kengaytirilgan Realilik**
   - VR/AR texnologiyalari yordamida tajriba o‘tkazish
   - Anatomiya, geografiya kabi mavzularda interaktiv darslar
   - Google Expeditions kabi ilovalar
4. **Sun'iy Intellekt va Ma'lumotlar Tahlili**
   - Oddiy AI vositalari bilan tanishish (Teachable Machine)
   - Statistik ma'lumotlarni tahlil qilish
   - Excel, Python yordamida ma'lumotlarni qayta ishlash
5. **Multimedia va Raqamli San'at**
   - Digital art, grafika dizayn

- Video tahrirlash, animatsiya
- Musiqa va texnologiyani birlashtirish

Xulosa

Texnologiya darslarida STEAM yondashuvining tatbiqi o‘quvchilarni nafaqat nazariy bilimlar, balki amaliy ko‘nikmalar bilan ham qurollantiradi. Bu yondashuv orqali ta’lim jarayoni yanada interaktiv, ijodiy va samarali tus oladi.

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JISMONIY TARBIYA DARSLARIDA BADIIY GIMNASTIKA ELEMENTLARIDAN SAMARALI FOYDALANISH YO‘LLARI

Annotatsiya. *Ushbu maqolada maktabda jismoniy tarbiya darslarida badiiy gimnastika elementlaridan foydalanishning amaliy ahamiyati va pedagogik foydasi tahlil qilinadi. Asosiy e’tibor, jismoniy tarbiya mashg‘ulotlarini zamonaviylashtirish, ya’ni dars metodikasi va uslublarini modernizatsiya qilish zaruratiga qaratilgan. Mazkur jarayonda badiiy gimnastika elementlarini o‘quv dasturiga integratsiya qilish orqali o‘quvchilarning jismoniy faolligini oshirish va estetik tarbiyasini rivojlantirish mumkinligi asoslab berilgan. Shuningdek, maqolada jismoniy tarbiyaning oltita asosiy o‘quv materiali ko‘rib chiqilib, badiiy gimnastika elementlarini o‘rgatishda qo‘llaniladigan asosiy usullar – yaxlit va qismlarga ajratilgan metodlar tahlil qilinadi.*

Kalit so‘zlar: *badiiy gimnastika, jismoniy tarbiya darslari, o‘quv dasturi, metodika, modernizatsiya, o‘quv materiali, mashq turlari, o‘qitish usullari.*

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WAYS TO EFFECTIVELY USE THE ELEMENTS OF RHYTHMIC GYMNASTICS IN PHYSICAL EDUCATION LESSONS

Annotation. This article analyzes the practical importance and pedagogical benefit of using the elements of rhythmic gymnastics in physical education classes at school. The main focus is on the need to modernize physical education training, that is, to modernize the methodology and methods of the lesson. This process is based on the fact that by integrating elements of rhythmic gymnastics into the curriculum, it is possible to increase the physical activity and develop aesthetic education of students. Also, the article will consider the six main educational materials of physical education and analyze the main methods used in teaching the elements of rhythmic gymnastics – holistic and piecemeal methods.

Keywords: rhythmic gymnastics, physical education classes, training das

Jismoniy tarbiya darslari o‘quvchi shaxsini rivojlantirishning asosiy vositalaridan biridir. Tibbiyot doirasida jismoniy mashqlar shaxsning irodasi, ongi, xarakter xususiyatlari va axloqiy fazilatlarining shakllanishi va rivojlanishiga ko‘p qirrali ta’sir ko‘rsatishi hammaga ma’lum. Badiiy gimnastika komponentlarini maktab jismoniy tarbiya darslari doirasida joriy etish o‘quvchining optimal jismoniy rivojlanishining ajralmas qismi hisoblanadi. Badiiy gimnastikani raqs

san’atiga yaqin bo‘lgan, maktab o‘quvchilarining ham jismoniy, ham estetik tarbiyasiga xizmat qiluvchi sport turi deb hisoblash mumkin.

Zamonaviy pedagogik amaliyotda badiiy gimnastikaning tarkibiy qismlari jismoniy tarbiya darslarining bir qismiga aylanib bormoqda, chunki ular vosita mahoratini shakllantirish va rivojlantirishga, axloqiy va irodaviy fazilatlar bilan tanishishga yordam beradi.

Badiiy gimnastika salomatlikni yaxshilaydi, jismoniy rivojlanishga yordam beradi, maktab o‘quvchilarining ishlash darajasini oshiradi, shuningdek, ularga belgilangan ritmda harakatlarni bajarishga imkon beradigan vosita fazilatlarini rivojlantiradi. Shuningdek, mashg‘ulotlar davomida maktab o‘quvchilarida elastiklik, harakatchanlik, moslashuvchanlik, chaqqonlik, kuch, chidamlilik, muvofiqlashtirish qobiliyatlari va sakrash qobiliyati rivojlanadi.

Bunday jismoniy tarbiya jarayonida bolaning tanasining funktsional farovonligida o‘sish kuzatiladi. Gimnastika mashqlari metabolizmga, shuningdek, markaziy asab tizimiga foydali ta’sir ko‘rsatadi. Ishtirokchilarning mushaklari rivojlanib, elastik va kuchli bo‘lib, hajmli jismoniy ishlarni bajarishga moslashadi.

Bundan tashqari, nafas olish va yurak-qon tomir tizimlarining, shuningdek, tayanch-harakat tizimi va ichki organlarning ishlashida yaxshilanish kuzatiladi. Organizmning tashqi muhitning salbiy ta’siriga umumiy qarshiligini oshirishning ilmiy asoslari mavjud. Shunday qilib, badiiy gimnastika elementlarini joriy etish orqali maktab yoshidagi bolalarning jismoniy rivojlanishi muammosi zamonaviy pedagogik amaliyot uchun juda dolzarb ko‘rinadi.

Sport va jismoniy tarbiya ishlarining an’anaviy shakllari ko‘pincha maktab rivojlanishining zamonaviy talablariga javob bermaydi, shuning uchun ularni isloh qilish zarur. Ayni paytda jahonning bir qator yirik mamlakatlarida maktab yoshidagi bolalarning ta’lim-tarbiyasini tashkil etishning eng mos uslub va yondashuvlarini keng ko‘lamli izlanishlar olib borilmoqda. Eng ilg‘or ta’lim muassasalari jismoniy tarbiya jarayonida badiiy gimnastika elementlarini o‘z ichiga olgan raqs va sport mashqlariga murojaat qilishadi. Ta’lim jarayonidagi bunday yangiliklar darsni qat’iy tartibga solishni va uning hissiy to‘yinganligini bekor qilishni nazarda tutadi.

Badiiy gimnastikaning usul va vositalarini maktabda jismoniy tarbiya darslari rejasiga kiritish taklifi 1975-yilda takomillashtirilgan maktab o‘quv dasturida kuchga kirgan. Biroq, bu vaqtda u zarur nazariy va uslubiy yordam olmadi.

Badiiy gimnastika komponentlarini maktabda jismoniy tarbiya darsi sharoitida qo‘llash ayrim xususiyatlar bilan tavsiflanadi. Maktab materiali o‘zgaruvchanligi bilan ajralib turadi, bu bajarilgan mashqlar komplekslarining tuzilishiga va ularning yo‘nalishiga bog‘liq. Shunday qilib, o‘quv materialining olti turi ajralib turadi. Biz yugurish, yurish va poyga turlari haqida gapiramiz; raqs qadamlari, shuningdek, ularning aloqalari haqida; qo‘llar va gavdaga (o‘pka, egilish) stress qo‘yadigan, shuningdek muvozanatni rivojlantirishga qaratilgan mashqlar haqida; obyektlardan foydalangan holda mashqlar haqida; oldinga siljish va joyida sakrash haqida; oyoq, qo‘l va tirsak mushaklarini bo‘shashtirishga qaratilgan mashqlar haqida.

Qoida tariqasida, maktab o‘quv dasturida badiiy gimnastika mashqlarini o‘rgatishning bir nechta fundamental usullari mashhur hisoblanadi. O‘qituvchilar o‘quv materialini va mashqlarni har tomonlama o‘zlashtirish usulini parchalash orqali o‘qitish uslubiga ustunlik beradilar.

Majmuaviy usul badiiy gimnastikada keng qo‘llaniladi, buni mashqlarning qulayligi bilan izohlash mumkin. Talaba uchun mavjud qiyinchilik darajasiga mos keladigan deyarli har bir mashqni yaxlit tarzda o‘zlashtirish mumkin. Bundan tashqari, shuni hisobga olish kerakki, yaxlit o‘qitish usulidan foydalanish talaba ilgari ega bo‘lgan keng harakat bazasining mavjudligini nazarda tutadi. Bunday harakat bazasi maktab yoshidagi bolaning o‘z-o‘zidan rivojlanishi uchun zarur bo‘lgan elementlarni o‘z ichiga oladi va undan ham qiyinroq mashqlarni o‘zlashtirishga imkon beradi.

Eng qiyin mashqlarni o‘rganish jarayonida bo‘linish yoki ajratish usuli ko‘pincha qo‘llaniladi. U vosita ko‘nikmalarini to‘g‘rilash, shuningdek, talaba tomonidan mumkin bo‘lgan xatolarni tuzatish uchun ishlatiladi. Harakatlarning alohida fazalarida aniqligini aniqlash uchun qismlarga ajratish yordamida mashq qilish usuli qo‘llaniladi.

Maktabda jismoniy tarbiya darslarida badiiy gimnastika usullari va vositalaridan foydalanish quyidagi maqsadlarga erishish uchun tavsiya etiladi:

- o‘quvchilarning kelajakdagi rivojlanishi uchun asos bo‘lgan vosita ko‘nikmalarini takomillashtirish;
- o‘quvchilarning umumiy massasidan iqtidorli maktab o‘quvchilarini aniqlash. Kelajakda badiiy gimnastikaga moyil bolalar bolalar va o‘smirlar maktabida maqsadli ravishda sportga yo‘naltirilgan mashg‘ulotlar bilan shug‘ullanishlari mumkin bo‘ladi.

Mutaxassislarning ta’kidlashicha, jismoniy tarbiyada predmetlar bilan mashqlarni o‘rgatish alohida o‘rin tutadi. Maktab o‘quvchilari uchun halqa, to‘p, lenta va arqon bilan mashg‘ulotlar foydali bo‘ladi. Ushbu sport anjomlari bilan mashqlar harakatlarni maxsus muvofiqlashtirishni o‘zlashtirish vositasidir. Ularning yordami bilan taktil, harakat va vizual analizatorlar, shuningdek, o‘quvchining fazoviy tasvirlari rivojlanishi sodir bo‘ladi.

Maktab o‘quv dasturining bir qismi sifatida o‘quvchining harakatlari obyekt harakati bilan birlashtiriladi, bu sport mahoratini to‘plashga va ko‘plab kasbiy va mehnat ko‘nikmalarini o‘rganishga yordam beradi. Ushbu mashqlarga quyidagilar kiradi:

- otish - bu harakat yordamida obyekt tayanchsiz pozitsiyani egallaydi;
- tutqich, ya’ni obyektni mustahkamlovchi harakat;
- ushlash, ya’ni obyektni erkin harakat holatida bo‘lgandan keyin mahkamlash;
- kat obyektning fazoviy aylanishi;
- qo‘llar yordamida obyektning erkin harakati sifatida tavsiflangan belanchak;
- aylanish, ya’ni jismning aylana harakati.

Badiiy gimnastikada ishlatiladigan apparatlar bir-biridan shakli, moddiy tuzilishi va vazni bilan farqlanadi. O‘qituvchi ushbu parametrlarga muvofiq bajariladigan mashqlar uchun texnika va taktikani tanlashi kerak [5, 319-321-betlar].

O‘quvchilarning jismoniy faolligining eng qulay darajasi maktabda ham, uyda ham jismoniy faoliyat rejimini malakali qurish orqali ta’minlanadi. Biroq, amaliyot shuni ko‘rsatadiki, maktab ta’limi sharoitida bolalar kamdan-kam hollarda zarur jismoniy faoliyatni olish imkoniyatiga ega.

Ushbu muammoni boshlang‘ich maktab bosqichida jismoniy tarbiya darslariga badiiy gimnastika usullarini joriy etish orqali hal qilish mumkin. Maktab o‘quvchisi tanasining fiziologik asoslarini qurish qanchalik tez boshlansa, harakatli ko‘nikmalar va psixofizik rivojlanishda umumiy qabul qilingan me’yordan chetga chiqish xavfi shunchalik kam bo‘ladi. Shifokorlarning fikriga ko‘ra, kelajakda uni tuzatishdan ko‘ra, harakat qobiliyatining rivojlanishidagi og‘ishlarning oldini olish osonroqdir.

Kirish darsida o‘qituvchi o‘quv faoliyatining maqsadlarini belgilaydi, umumiy qabul qilingan talablar o‘quvchilarga etkaziladi, o‘quv materialining mazmuni ochib beriladi, jismoniy rivojlanish darajasi tekshiriladi. Bu darslar ilgari noma’lum bo‘lgan materialni o‘zlashtirish va o‘rganilgan narsalarni mustahkamlashni o‘z ichiga oladi. O‘zlashtirish, takrorlash va takomillashtirish mashqlarini birlashtirgan aralash darslar ham ta’kidlangan. Hozirda ikkinchisi maktablarda keng tarqalgan.

Nazorat mashg‘ulotlari jismoniy faoliyat dasturining istalgan qismi bajarilgandan so‘ng qo‘llaniladi. Bunday darslarda o‘qituvchi gimnastika mashqlarining bajarilishini baholaydi.

Gimnastika elementlariga boy jismoniy tarbiya mashg‘ulotlari o‘quvchilarning jismoniy salomatligini mustahkamlash vazifasi bilan bir qatorda tarbiyaviy maqsadlarga erishishga yordam beradi, jumladan diqqatni jamlash, tashkilotchilik, qiyinchiliklarni yengish uchun zarur bo‘lgan iroda, aniqlik, harakatlar estetikasi, kollektivizm va boshqalar. Shunday qilib, ta’lim va sog‘liqni saqlash maqsadlari ta’lim maqsadlari bilan birgalikda amalga oshiriladi.

N.O.Andreeva maktab yoshidagi bolalarning jismoniy tarbiyasiga badiiy gimnastika elementlarining ta’sirining mohiyatini aniqlashga qaratilgan pedagogik tajriba o‘tkazdi. Jismoniy tarbiya mashg‘ulotlarida tadqiqotchi gimnastik to‘pni otish, ushlash va uloqtirishni o‘z ichiga olgan mashqlardan foydalanishni taklif qildi. Ro‘yxatda keltirilgan mashqlarning har biri maktab o‘quvchilari tomonidan o‘ttiz soniya davomida bajarilgan.

Tajriba natijalariga ko‘ra, tavsiya etilgan gimnastika mashqlarini bajargan bolalarning harakat ko‘nikmalarini rivojlantirish darajasini vizual baholashda ularning jismoniy rivojlanishining ijobiy dinamikasi yaqqol namoyon bo‘lishi aniqlandi. Maktab o‘quvchilarining rasm chizish va yozish ko‘nikmalarini o‘zlashtirishda ham muvaffaqiyatlar qayd etildi.

Shunday qilib, maktablarda badiiy gimnastika elementlarini bajarish maktab o‘quvchilarining jismoniy rivojlanishiga ijobiy ta’sir ko‘rsatadi. Tananing stressga

moslashish qobiliyati ortadi. Bundan tashqari, badiiy gimnastika elementlari o‘quvchilarni doimiy sport mashg‘ulotlariga jalb etishni, tayyorlanayotgan va iqtidorli o‘quvchilarni sportga yo‘naltirilgan ixtisoslashtirilgan maktablarda keyingi ta’lim olish uchun tanlashni ta’minlaydi. Hozirgi vaqtda maktab o‘quv dasturining bir qismi sifatida gimnastika mashqlarining ommaviyligi ortib bormoqda. Tarix shuni ko‘rsatadiki, mahalliy jismoniy tarbiya dasturidagi gimnastika ko‘p qirrali axloqiy, jismoniy va estetik tarbiyaning eng qulay vositalaridan biri bo‘lib ko‘rinadi.

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SUV OMBORLARINING BOSHQA SUV HAVZALARIDAN FARQLANISHI VA UNDAN XO‘JALIKDA FOYDALANISHNING AMALIY AHAMIYATI

Annatatsiya:*Maqolada suv omborlarining boshqa suv havzalaridan farqlanishi hamda suv omborlarning o‘ziga xos xususiyatlari, suv omborlarning ilmiy - amaliy ahamiyati, suv resurslaridan foydalanishni oqilona tashkil qilish masalasini tobora dolzarb darajaga borayotganligi to‘g‘risida ma’lumotlar keltirilgan.*
Kalit so‘zlar: *suv ombor, daryo, ko‘l, drenaj, irrigatsiya, gidroenergetika, gidrologik, gidrofizik - gidrobiologik jarayonlar, gidrodinamik zona, melioratsiya.*

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DIFFERENCES OF RESERVOIRS FROM OTHER RESERVOIRS AND THE PRACTICAL SIGNIFICANCE OF THEIR ECONOMIC USE

Annotation: *The article provides information on the differences between reservoirs and other water bodies, the specific features of reservoirs, the scientific and practical significance of reservoirs, and the increasing relevance of the issue of rational organization of water resource use.*
Keywords: *reservoir, river, lake, drainage, irrigation, hydropower, hydrological, hydrophysical-hydrobiological processes, hydrodynamic zone, land reclamation.*

Suv resurslaridan foydalanishni to‘g‘ri tashkil qilish xo‘jalik yuritishning muhim shartlaridan biri hisoblanadi. Tabiatda mavjud tabiiy suv havzalari va ularning o‘ziga xos jihatlari xo‘jalik tizimini tashkil qilishda muhim omil bo‘lib xizmat qilgan. O‘z vaqtida buyuk sivilizatsiyalar suv havzalariga bog‘liq ravishda shakllangan edi. Suv havzalarining ahamiyati zamonaviy taraqqiyotda ham muhim o‘rin egallaydi. Ayniqsa suvga bo‘lgan ehtiyoj tobora kuchayib borayotgan bugungi kunda suv resurslaridan foydalanishni oqilona tashkil qilish masalasini tobora dolzarb darajaga ko‘tarmoqda. Bunday holatda suv resurslarini muhofaza qilish va tejamkorlik bilan foydalanish usullarini ishlab chiqish zarur. Azaldan ota-

bobolarimiz suvni muqaddas ne`mat bilib, uning har tomchisidan samarali va tejamli foydalanishgan. Chunki, suv resurslarining miqdori va sifati jamiyatning barqaror ijtimoiy va iqtisodiy rivojlanishini belgilaydigan muhim omillardan hisoblanadi. Shu nuqtai nazardan ham mamlakatimiz taraqqiyotida suv resurslari alohida o`rin tutadi.[4]

Suv ombori – sun'iy barpo qilingan suv obyekti bo‘lib, daryo vodiysida suvning yo‘lini to‘g‘on yordamida to‘sib suvni akkumulyatsiya qilish, saqlab turish va zarur vaqtda foydalanish uchun ishlatiladi. Suv omborini barpo qilishdan asosiy maqsad – daryo oqimi suv hajmini ichimlik suvi ta'minoti, irrigatsiya, gidroenergetika, sanoat, ekologiya, suv toshqini xavfi va boshqa talablarni ko‘zda tutgan holda boshqarishdir.

Yer yuzining deyarli barcha mintaqalarida gidrotexnik inshootlarni qurish ishlari jadallik bilan bajarilib kelinmoqda.Ularning eng muhimlariga har xil melioratsiya (sug‘orish va yaxshilash) turlarini amalga oshirish maqsadida bunyod etilgan suv omborlari va kanallar kiradi.

Sayyoramizning global ekologik tizimlarida ko‘lami va ahamiyati jihatidan insonning turli xil transformatsiviy faoliyatida ikkita jarayon alohida ajralib turadi: birinchisi qishloq xo‘jaligi ishlab chiqarishi, sanoat va qurilish sohasi uchun yangi hududlarni o‘zlashtirish va ikkinchisi gidrosferaning, daryo bo‘g‘inlarini gidrotexnik qurilishlar orqali yerlarni keng ko‘lamli o‘zgartirishdir.

Gidrotexnikaviy qurilishlar sayyoramizning barcha qit'alarida amalga oshiriladi. Melioratsiyaning har xil turlari (drenaj va sug‘orish) va yangi suv havzalari - suv omborlari va kanallarni yaratish, juda muhim ahamiyatga ega). Suv omborlari har qanday darajadagi gidrotexnika va suv xo‘jaligi tizimlarining asosiy elementlari hisoblanadi, chunki ular suv resurslarini tartibga solish, gidrosferani jamiyat xohlagan yo‘nalishda o‘zgartirishga imkon beradi.

Bizning fikrimizga ko‘ra, suv omborlariga, suv almashinuvi sekin bo‘lgan, umumiy hajmi 1 million metr^3 dan ortiq bo‘lgan zaxiralarni to‘plash va keyinchalik iqtisodiy va ijtimoiy ehtiyojlarni qondirishda foydalanish uchun gidrotexnika inshootlari tomonidan doimiy ravishda tartibga solinadigan (nazorat qilinadigan) daraja rejimida, sun'iy ravishda yaratilgan vodiy, havza va tabiiy ko‘l suv havzalari deb qaralishi kerak. Shuni ta'kidlash kerakki, suv omborlaridan foydalanish, nafaqat suvni qaytarib bo‘lmaydigan darajada tortib olish bilan bog‘liq, baliqchilik, dam olish, elektr stansiyalarini sovutish, suv omborida kafolatlangan kema qatnovi chuqurligini saqlash va hokazolar uchun har yili iste'mol qilinadigan suv ta'minoti emas, balki suv maydoni va umuman suv massasi kerak.

Suv omborlari inson tomonidan boshqariladigan obyektlar hisoblanadi. Bu shuni anglatadiki, suv omborining asosiy parametrlari (hajmi, maydoni, joylashuvi va tartibga solish rejimi) va ular bilan birga boshqa ko‘plab xususiyatlar hamda inson tomonidan boshqariladigan: gidroelektr majmualar, suv omboridagi suv hajmini va darajasini o‘zgartirishga imkon beruvchi maxsus texnik tizimlar, inshootlar va qurilmalar (gidravlik turbinalar va h.zo) ni o‘z ichiga oladi.

Suv omborlarini yaratishda yangi suv omboriga to‘g‘ridan to‘g‘ri tutash hududlarda ham, daryoning quyi oqimida ham, undan uzoqda joylashgan

hududlarda tabiiy va iqtisodiy sharoitlarda turli xil o‘zgarishlar ro‘y beradi. Ushbu o‘zgarishlarning ko‘lami, chuqurligi va yo‘nalishi, yangi suv omborining hajmi (maydoni, suv massasining hajmi, uzunligi, kengligi) va hududning o‘ziga xos tabiiy sharoitlari bilan belgilanadi, bu esa suv omborining ta’sirini zaiflashtirishi yoki, aksincha, kuchaytirishi mumkin.

Suv omborlari, suv havzalari ichidagi jarayonlarning maxsus tizimi bilan tavsiflanadi, ya’ni ularga xos bo‘lgan gidrologik, gidrofizik-kimyoviy va gidrobiologik jarayonlar boshqa suv havzalarida – ko‘llar, daryolar va kanallarda kuzatiladigan jarayonlar bilan bir xil emas. Suv omborlarida o‘zaro sharoitlar bilan bog‘liq bo‘lgan, suv omborlari ichidagi jarayonlarning o‘ziga xos xususiyatlarini belgilovchi yetakchi omillar, suv almashinuvi va suv omborining sath rejimidir. Suv almashinuvining ko‘rsatkichlaridan biri suv massasining to‘liq o‘zgarishi sodir bo‘ladigan davrdir: har xil turdagi suv omborlari uchun u bir necha kundan bir necha yilgacha bo‘lishi mumkin.

Turli suv havzalarida, suv sathining tebranishlari amplitudasi ham juda katta farq qiladi - pasttekislikdagi suv omborlari uchun bir necha o‘n santimetrdan, tog‘li suv omborlari uchun o‘nlab va hatto 100 m dan ortiq. Aynan mana shu omillar suv havzalarida suv ombori ichidagi jarayonlarning rivojlanish shartlarini ko‘l va daryolarga xos bo‘lgan sharoitlardan ajratib turadi. Bu suv omborlarida, tranzit oqimining faol gidrodinamik zonalari, ya’ni suvning to‘g‘on tomon yo‘naltirilgan harakati va suv zarralari juda murakkab yopiq trayektoriyalar bo‘ylab harakat qilganda, girdobli aylanish zonalari hosil bo‘lishida namoyon bo‘ladi. [1; 9-13-b]

Suv omborlari inson tomonidan muayyan maqsadlarda, masalan, sug‘orish, ichimlik suvi ta’minoti, gidroenergetika yoki suv toshqinlarini nazorat qilish uchun sun’iy ravishda yaratiladi. Ular odatda daryo vodiylarida to‘g‘on qurish yoki boshqa gidrotexnik inshootlar barpo etish orqali hosil qilinadi. Bunday inshootlar daryo oqimini to‘sib, suvni yig‘ish va kerakli vaqtda foydalanish imkonini beradi.[2; 26-b]

Suv omborlarining, ayniqsa, yirik suv omborlarining iqtisodiy ahamiyati ortib borayotgani, suv xo‘jaligi majmualarining shakllanishida namoyon bo‘ladi. Suv omborlari nafaqat suv xo‘jaligining o‘zi, balki ijtimoiy-iqtisodiy aloqalar va munosabatlar tizimida ishtirok etadi. Suv ombori faqat bir tarmoq manfaatini ko‘zlab yaratilgan bo‘lsa ham, vaqt o‘tishi bilan xo‘jaligning boshqa tarmoqlari ham undan foydalanishdan manfaatdor bo‘ladi.

Suv omborlari gidravlik va suv xo‘jaligi aloqalari orqali avval daryo uchastkasi doirasida, so‘ngra daryo havzasi doirasida tabiiy-xo‘jalik munosabatlarining murakkab tarmoqlangan tizimiga ham kirishi muqarrar. Kelajakda yer usti oqimlarining havzalararo ko‘chishlari rivojlanishi bilan suv omborlarining asosiy roli yanada katta hududlarga tarqaladi.

Suv omborlarining qurilishi – tabiiy landshaftlarning qiyofasi, tuzilishi, sizot suvlarining yer yuzasiga muttasil yaqinligidan deyarli ko‘p joylarda tuproqlarning sho‘rlanishi hamda ulardagi kechayotgan jarayonlar va ekologik holatining butunlay o‘zgarishiga olib keladi. Bu esa, asosan, inson aralashuvi

natijasida sodir bo‘lishi bevosita yoki bilvosita yangi tipdagi landshaftlarning shakllanishi va paydo bo‘lishiga olib keladi. [3; 10-b.].

Suv omborlarini qurish qurg‘oqchil hamda qishloq xo‘jaligi sug‘orishga asoslangan hududlar uchun, ayniqsa, zarurligi bilan izohlanadi.

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IMPACT OF SOIL POLLUTION ON HUMAN HEALTH. SOIL POLLUTANTS WITH HOUSEHOLD AND INDUSTRIAL WASTE

Summary: *Soil is one of the strong environmental factors on which human health depends. It is the soil that plays the leading role in the cycle of substances in nature. Being in constant contact with other environmental flows, such as the atmosphere, hydrosphere, flora, soil, it is a necessary link in the path of substances entering the human body.*

Key words: *soil cover, lithogenic and soil health factors, biogeochemical endemics, prion, soil health*

Materials and methods: Watercress seedlings grown on soil samples treated with household pollutants in a wide range of concentrations. Hypothesis. The hypothesis was that the introduction of safe, in the public consciousness, household pollutants (carbonated drink, shampoo, petroleum product) into the soil delays the development of plants and changes their morphological properties. It was also assumed that the least harmful effect should be that of carbonated drink, then shampoo and then petroleum product. The most harmful effect, according to the initial hypothesis, should be that of copper sulfate.

Introduction: Each of us knows that the environment in which we are forced to live affects our health. We are interested in the quality of the water we drink and the air we breathe. But do we know how the condition of the soil affects our health?

Soil, like drinking water and atmospheric air, has a significant impact on human health. First of all, because soil is the main means of agricultural production, and the condition of the soil affects both plant and livestock products. It is important for people to receive a sufficient amount of nutrients necessary for the construction and normal functioning of the body. We must not forget that along with food products, a person can receive both useful and harmful substances that negatively affect his development and life. Deficiency or excess of microelements in the soil also leads to their deficiency in plants, animals and humans. Diseases associated with deficiency or excess of microelements are called endemic. For example, low iodine levels in the soil can cause thyroid diseases. Low fluorine content in soil and drinking water leads to dental caries.

Soil pollution is defined as the presence of toxic chemicals (pollutants or contaminants) in soil, in high enough concentrations to pose a risk to human health and/or the ecosystem. In the case of contaminants which occur naturally in soil, even when their levels are not high enough to pose a risk, soil pollution is still said

to occur if the levels of the contaminants in soil exceed the levels that should naturally be present.

Today, about 3.2 billion people around the world suffer from the consequences of land pollution, with more than 500 thousand previous deaths recorded annually. A significant portion is observed in vulnerable groups: children, elderly people and those who live for a long time in contaminated areas. Thus, during the Industrial Revolution, about 135 billion tons of soil were lost from agricultural land.

Among the natural factors influencing the occurrence of human diseases, climatic, biological, lithogenic and soil factors are distinguished. The natural factor can be the cause of the spread of fatal diseases, the causative agents of which are not only animals and insects - carriers of pathogenic microorganisms. Rocks with an increased radioactive background, toxic groundwater, pollutants also affect humans. The natural factor is an insignificant part of about 20% of all factors influencing human health, and in the modern world their share is significantly increasing, which is associated with general pollution of the environment. At the same time, the soil accounts for the bulk of pollutants accumulating in the upper root-inhabited horizons

Soil is not an inert repository of pollutants. Their redistribution occurs in the profile, and toxicity changes. The entire catalytic system of the soil participates in these processes: microorganisms, immobilized enzymes, organic matter, aluminosilicates, metal oxides and hydroxides. However, much remains unclear in these processes. On the one hand, clay minerals accelerate the decomposition of pesticides, the formation of humus-like substances, which increases fertility and improves the structural functions of the soil. In other cases, such as with prions, clay minerals (montmorillonite, kaolinite) can enhance the activity of infectious particles, which leads to deterioration of the sanitary functions of the soil. It is quite

obvious that we still know very little about the behavior of infectious particles, pathogenic microorganisms and the products of their vital activity in the soil

Causes of soil pollution

The root cause of soil pollution is often one of the following:

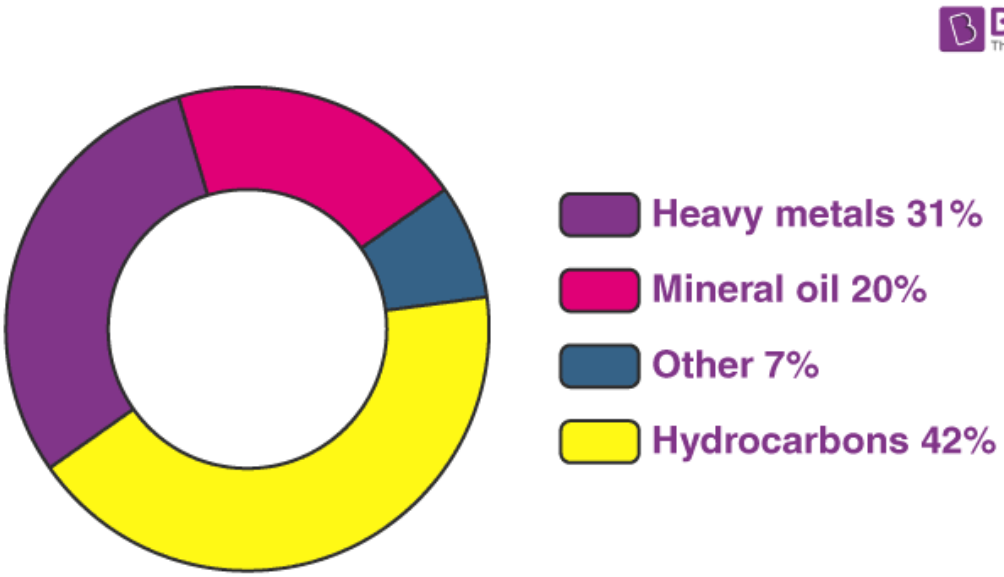
- Agriculture (excessive/improper use of pesticides)
- Excessive industrial activity
- Poor management or inefficient disposal of waste

The challenges faced in soil remediation (decontamination of soil) are closely related to the extent of soil pollution. The greater the contamination, the greater the requirement for resources for remediation.

The causes of soil pollution are usually divided into natural and anthropogenic.

Natural causes: Natural contamination is quite rare and can occur through the activity of soil microbes, through the transport of pollutants through precipitation, or due to floods and other natural disasters. In some arid areas, compounds containing perchlorates, substances harmful to plants and living beings, accumulate in the soil. Perchlorates can also form in soil containing chlorine and certain metals during thunderstorms. These cases account for a small percentage of the total volume of land contamination.

Some of the most hazardous soil pollutants are xenobiotics – substances that are not naturally found in nature and are synthesized by human beings. The term ‘xenobiotic’ has Greek roots – ‘Xenos’ (foreigner), and ‘Bios’ (life). Several xenobiotics are known to be carcinogens. An illustration detailing major soil pollutants is provided below.



The different types of pollutants that are found in contaminated soil are listed in this subsection.

Anthropogenic causes: Consequences of soil pollution Toxic pollutants degrade soil over the long term, which means they can reduce crop yields and make food unfit for consumption. For example, land contaminated with inorganic aluminum can be toxic to plants. It also often increases the salinity of the soil, and crops can no longer be grown on it. Soils become contaminated as a result of spills of hazardous substances. For example, gasoline and diesel fuel entering the ground leads to hydrocarbon pollution. Also, large areas suffer as a result of wars and military operations. Industrial zones and local facilities make a negative contribution. For example, demolition of old buildings can lead to asbestos contamination of the soil. Lead-based paints are used in construction, which can lead to dangerous concentrations of this heavy metal in the ground. Foundry operations often result in the dispersion of metal contaminants into nearby areas.

Almost all cases of soil pollution are anthropogenic in nature. A variety of human activities can lead to the contamination of soil. Some such processes are listed below.

- The demolition of old buildings can involve the contamination of nearby soil with asbestos.
- Usage of lead-based paint during construction activities can also pollute the soil with hazardous concentrations of lead.
- Spillage of petrol and diesel during transportation can contaminate soils with the hydrocarbons found in petroleum.
- Activities associated with metal casting factories (foundries) often cause the dispersion of metallic contaminants into the nearby soils.
- Underground mining activities can cause the contamination of land with heavy metals.
- Improper disposal of highly toxic industrial/chemical waste can severely pollute the soil. For example, the storage of toxic wastes in landfills can result in the seepage of the waste into the soil. This waste can go on to pollute groundwater as well.
- Chemical pesticides contain several hazardous substances. Excessive and inefficient use of chemical pesticides can result in severe soil pollution.
- Sewage produced in urbanized areas can also contaminate soil (if not disposed of correctly). These wastes may also contain several carcinogenic substances.

Purpose of the study: Objective of the study was to find out to what extent such household substances affect the human health. Whether they have any effect at all. For comparison, we chose an obvious pollutant - copper sulfate, which we use to treat plants to protect them from insect pests. Watercress was used as a bioindicator, since it has a high sensitivity to pollutants, is characterized by rapid seed germination, and the shoots and roots of this plant undergo noticeable changes under the influence of pollutants (growth retardation, change in the size, color and

shape of the shoots). Having studied the effect of household pollutants on plants, we can assume that they also affect human health.

Conclusion: Industrial zones and local facilities make a negative contribution. For example, demolition of old buildings can lead to asbestos contamination of the soil. Lead-based paints are used in construction, which can lead to dangerous concentrations of this heavy metal in the ground. Foundry operations often result in the dispersion of metal contaminants into nearby areas. Against the background of such disappointing forecasts, experts propose to control soil pollution, including creating networks for monitoring the quality of land and the environment. Scientists and environmentalists are calling for an end to the use of toxic substances in industry if safer alternatives are available. It is also important to introduce and expand recycling and proper disposal of waste, this will help reduce damage to soils from landfills.

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"4K" MODELI TUSHUNCHASINING ILMIY METODIK TALQINI

Annotatsiya: *Zamonaviy ta'lim tizimida 4K ko'nikmalari (tanqidiy fikrlash, kreativlik, kommunikatsiya va kooperatsiya) o'quvchilarning hayotiy muammolarni hal qilish qobiliyatini rivojlantirishda asosiy o'rin tutadi. Ushbu maqolada 4K ko'nikmalarining ilmiy metodologik talqini keltirilgan bo'lib, ularning ta'lim jarayoniga integratsiyasi va samaradorligi tahlil qilingan. OAK (O'zbekiston Akademik Kengashi) talablariga mos ushbu tadqiqotda har bir ko'nikma alohida o'rganilib, ularning amaliy ahamiyati va natijalari baholanadi.*

Kalit so'zlar: *tanqidiy fikrlash, kreativlik, kommunikatsiya, kooperatsiya, zamonaviy ta'lim, ko'nikmalar, strategik fikrlash, muloqot, jamoaviy ishlash.*

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SCIENTIFIC AND METHODOLOGICAL INTERPRETATION OF THE CONCEPT OF THE "4K" MODEL

Annotation: *In the modern education system, the 4C skills (critical thinking, creativity, communication, and collaboration) play a vital role in developing students' ability to solve real-life problems. This article presents a scientific and methodological interpretation of the 4C skills, analyzing their integration into the educational process and their effectiveness. In this research, which meets the requirements of the HAC (Higher Attestation Commission of Uzbekistan), each skill is examined individually, and their practical significance and outcomes are evaluated.*

Keywords: *critical thinking, creativity, communication, collaboration, modern education, skills, strategic thinking, interaction, teamwork.*

Kirish

XXI asr bilan birga dunyo tezkor ravishda o'zgarib bormoqda va bu o'zgarishlar insonlarga yangi talablarni qo'yib bermoqda. Ta'lim tizimida ham bunday o'zgarishlar sezilarli darajada ortib bormoqda. Zamonaviy jamiyatda faol fuqarolar sifatida kamol topish uchun o'quvchilarda asosiy ko'nikmalarga ega bo'lish talab etiladi. Bu ko'nikmalar orasida eng muhimlari tanqidiy fikrlash, kreativlik, kommunikatsiya va kooperatsiya ko'nikmalari hisoblanadi. Ularni umumlashtirib "4K modeli" deb ataladi. Ushbu maqola mazkur modelni ilmiy metodologik nuqtai nazardan tahlil qilishga bag'ishlangan.

Metodologiya

Ushbu tadqiqotda 4K ko‘nikmalarining ilmiy va amaliy jihatdan chuqur o‘rganilishi uchun bir qator metodlar qo‘llanildi. Birinchi navbatda, tahlil usuli orqali tanqidiy fikrlash, kreativlik, kommunikatsiya va kooperatsiya kabi ko‘nikmalarning har bir elementi alohida o‘rganildi. Bu jarayonda 4K ko‘nikmalarining ta’riflari, asosiy xususiyatlari hamda ularning o‘zaro bog‘liqligi aniqlandi. Har bir ko‘nikma boshqa ko‘nikmalar bilan uzviy ravishda bog‘langan bo‘lib, ulardan biri rivojlanishi bilan qolganlari ham o‘sadi. Masalan, tanqidiy fikrlash ko‘nikmasi rivojlanganda, u o‘quvchilarning muammolarni hal qilishga yo‘naltirilgan jamoaviy ishlash mahoratini ham oshiradi.

Ikkinchi navbatda, sistemali yondashuvdan foydalanib, 4K ko‘nikmalari bir-biriga bog‘liq bo‘lgan integral sistema sifatida ko‘rib chiqildi. Sistemali yondashuv yordamida 4K ko‘nikmalarining har bir elementi alohida emas, balki umumlashtirilgan holda tahlil qilindi. Bu yondashuv natijasida ko‘nikmalar orasidagi o‘zaro ta’sir va integratsiya darajasi aniqroq tushuntirildi. Sistemali yondashuv shuningdek, 4K ko‘nikmalarining ta’lim jarayoniga qanday tartibda kiritilishi kerakligini aniqlashga imkon berdi.

Uchinchi navbatda, amaliy tahlil usuli qo‘llanilib, ko‘nikmalarning ta’lim jarayoniga integratsiyasi va ulardan o‘quvchilar foydalangan holda olingan natijalar o‘rganildi. Amaliy tahlil jarayonida turli maktablar va o‘quv markazlarida o‘quvchilarga 4K ko‘nikmalarini singdirishga qaratilgan darslar va mashg‘ulotlar tahlil qilindi. Natijada, ko‘nikmalarning ta’lim jarayoniga to‘liq integratsiyasi lozimligi, bunda o‘quv materiallarining yangilanishi va o‘qitish usullarining modernizatsiyasi zarurligi aniqlandi. Misol uchun, ingliz tili darslarida kommunikatsiya ko‘nikmalarini rivojlantirishga qaratilgan interaktiv mashqlar o‘quvchilarning muloqot qobiliyatini sezilarli darajada oshirgan.

To‘rtinchi navbatda, mavjud adabiyotlar tahlil qilinib, ularning nazariy va amaliy ahamiyati baholandi. Adabiyotlar taqdimoti usuli yordamida zamonaviy pedagogika, psixologiya va ta’lim nazariyasining eng dolzarb masalalari chuqur o‘rganildi. Xususan, tanqidiy fikrlash va kreativlik kabi ko‘nikmalarni rivojlantirishga bag‘ishlangan ilmiy ishlar tahlil qilindi. Shu bilan birga, O‘zbekiston Respublikasida ta’lim sohasida amalga oshirilayotgan islohotlar va innovatsion texnologiyalar ham o‘rganildi.

Tahlil va natijalar

Tanqidiy fikrlash ko‘nikmasi ta'lim jarayonida muhim o‘rin tutadi. Bu ko‘nikma orqali o‘quvchilar hayotiy vaziyatlarni chuqur tahlil qilish, ularni tushunish va yechim topishga o‘rgatiladi. Tanqidiy fikrlashning asosiy elementlari muammoni tahlil qilish va algoritm yaratishdan iborat. O‘quvchi avval masalani kichik bo‘limlarga ajratib, har bir qismini alohida o‘rganishi kerak. Keyin esa ma'lumotlarni baholash va dalillarni ajratish mahorati rivojlanadi. Strategik fikrlash va refleksiya ham tanqidiy fikrlashning ajralmas qismidir. Masalan, matematika darsida murakkab tenglamani yechishda o‘quvchi avval masalani tahlil qiladi, unda ishtirok etgan raqamlar va amallarning ahamiyatini baholaydi, so‘ngra uni yechish

uchun ketma-ketlik yaratadi. Shuningdek, tarix fanida voqealar o‘rtasidagi sabab-oqibat bog‘liqligini aniqlash ham tanqidiy fikrlashning namunasidir.

4K ko‘nikmalari o‘zaro uzviy bog‘langan sistema sifatida ta'lim jarayonida integratsiyalanadi. Har bir ko‘nikma boshqa ko‘nikmalarning rivojlanishiga hissa qo‘shadi. Masalan, tanqidiy fikrlash ko‘nikmasi kreativlikni rivojlantirishga yordam beradi, chunki muammoni chuqur tahlil qilish orqali yangi yechimlar topish imkoniyati paydo bo‘ladi. Kommunikatsiya ko‘nikmalari esa kooperatsiya jarayonini yanada samarali qiladi, chunki effektiv muloqot jamoa ichida yaxshi o‘zaro tushunishni ta'minlaydi.

Ta'lim jarayonida 4K ko‘nikmalarining amaliy tatbiqi muhim ahamiyat kasb etadi. Darsliklardagi mashqlar, laboratoriya ishlari, jamoa loyihalari va boshqa faoliyatlar orqali bu ko‘nikmalar rivojlantiriladi. O‘qituvchilar ham o‘z darslarida ushbu ko‘nikmalarni rivojlantirishga alohida e'tibor berishlari kerak. Bunda zamonaviy ta'lim texnologiyalaridan foydalanish, interfaol metodlardan foydalanish va o‘quvchilarning faol ishtirokini ta'minlash muhim rol o‘ynaydi. Natijada o‘quvchilar hayotiy vaziyatlarda o‘z ko‘nikmalaridan samarali foydalanishga o‘rganadilar va kelajakda muvaffaqiyatli fuqarolar sifatida jamiyatda faol ishtirok etish imkoniyatiga ega bo‘ladilar.

Muhokama

4K ko‘nikmalari – tanqidiy fikrlash, kreativlik, kommunikatsiya va kooperatsiya – zamonaviy ta’limning asosiy ustuvor yo‘nalishlaridan biri hisoblanadi. Ushbu ko‘nikmalar faqat nazariy bilimlarni emas, balki amaliy mahoratlar va ijtimoiy qobiliyatlarni ham rivojlantirishga qaratilgan. Zamonaviy jamiyatda faol fuqarolar sifatida kamol topish uchun bu ko‘nikmalar juda muhim ahamiyat kasb etadi.

Tahlil natijalariga ko‘ra, 4K modelining eng muhim xususiyati uning integrativligidir. Har bir ko‘nikma alohida o‘rganilishi mumkin bo‘lsa-da, ular bir-biri bilan chambarchas bog‘liqdir.

Xulosa

4K ko‘nikmalari (tanqidiy fikrlash, kreativlik, kommunikatsiya va kooperatsiya) XXI asrda ta’lim tizimining markaziy elementi hisoblanadi. Ushbu ko‘nikmalar o‘quvchilarni mustaqil, tafakkurli va jamoaviy faoliyat yurita oladigan shaxslar sifatida kamol toptirishga yordam beradi. Tahlil natijalariga ko‘ra, 4K modeli ta’lim jarayonida samarali qo‘llanilishi mumkinligi isbotlandi. Bundan kelib chiqib, ta’lim tizimida ushbu ko‘nikmalarni rivojlantirishga alohida e’tibor berish lozim.

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BO‘LAJAK INGLIZ TILI O‘QITUVCHILARINING KASBIY KO‘NIKMALARINI “4K” MODELI ASOSIDA RIVOJLANTIRISH METODIKASINI TAKOMILLASHTIRISHNING PEDAGOGIK-PSIXOLOGIK XUSUSIYATLARI

Annotatsiya: *Mazkur maqolada bo‘lajak ingliz tili o‘qituvchilarining kasbiy ko‘nikmalarini “4K” modeli (Kompetentlik, Kreativlik, Kommunikativlik, Ko‘rgazmalilik) asosida rivojlantirish metodikasi takomillashtirilgan. Pedagogik-psixologik xususiyatlar, o‘quv jarayonining samaradorligini oshirish va talabalarning mustaqil faoliyatini rag‘batlantirishga qaratilgan. Maqola nazariy va amaliy tadqiqot usullaridan foydalanib yozilgan bo‘lib, natijalar ta’lim sifatini oshirishga yo‘naltirilgan.*

Kalit so‘zlar: *4K modeli, pedagogik-psixologik xususiyatlar, ingliz tili o‘qituvchilari, kompetentlik, kreativlik, kommunikativlik, ko‘rgazmalilik.*

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PEDAGOGICAL AND PSYCHOLOGICAL FEATURES OF IMPROVING THE METHODOLOGY FOR DEVELOPING PROFESSIONAL SKILLS OF FUTURE ENGLISH TEACHERS BASED ON THE "4K" MODEL

Annotation: *This article presents an improved methodology for developing the professional skills of future English language teachers based on the "4C" model (Competence, Creativity, Communicativeness, and Visuality). It explores pedagogical and psychological characteristics, enhancing the effectiveness of the learning process, and encouraging students’ independent activity. The article is based on both theoretical and practical research methods, and the results are aimed at improving the quality of education.*

Keywords: *4C model, pedagogical and psychological characteristics, English language teachers, competence, creativity, communicativeness, visuality*.

Kirish

Zamonaviy ta’lim tizimida o‘qituvchi kasbini egallagan o‘rni hisobga olganda, ularning kasbiy ko‘nikmalarini rivojlantirish muhim ahamiyatga ega. Ingliz tili o‘qituvchilari uchun bu masala yanada muhimroq, chunki til o‘rganish jarayoni murakkab va ko‘p jihatdan psixologik omillarga bog‘liq. Bo‘lajak o‘qituvchilarni tayyorlashda “4K” modeli asosida metodikani takomillashtirish

talabalarning kasbiy salohiyatini oshirishga, ularda innovatsion yondashuvni shakllantirishga imkon beradi.

Mazkur maqolada ingliz tili o‘qituvchilarining kasbiy ko‘nikmalarini “4K” modeli orqali rivojlantirishning pedagogik-psixologik xususiyatlari o‘rganilgan.

Metodologiya

Tadqiqotda nazariy va amaliy usullardan keng foydalanildi. Nazariy usullar tadqiqotning ilmiy asosini shakllantirishda muhim rol o‘ynadi. Birinchi navbatda, mavjud ilmiy manbalar, pedagogika, psixologiya va metodika sohasidagi fundamental adabiyotlar chuqur o‘rganildi. Bu manbalarni tahlil qilish orqali ingliz tili o‘qituvchilarining kasbiy faoliyatiga oid nazariy bilimlar sistemasi aniqlandi. Ta’lim standartlari va dasturlar ham nazariy jihatdan baholandi. Ayniqsa, bo‘lajak o‘qituvchilarning kompetentsiyalarini rivojlantirishga oid xalqaro va milliy talablarni o‘rganish alohida e’tiborga olindi. Shuningdek, zamonaviy pedagogik-psixologik nazariyalar, jumladan, humanistik ta’lim, inqilobiy o‘qitish texnologiyalari va refleksiv o‘qitish tamoyillari tadqiqot uchun nazariy bazani boyitdi.

Amaliy usullar esa tadqiqotni amaliyotga tatbiq etish va natijalarni sinash imkonini berdi. Tadqiqot ob’ekti sifatida oliy o‘quv yurtlarida ingliz tili o‘qituvchilari tayyorlov yo‘nalishida tahsil olayotgan talabalar tanlandi. Amaliy usullarga pedagogik eksperiment, anketalash va kuzatish kiradi. Pedagogik eksperiment jarayonida “4K” modeli asosida ishlab chiqilgan metodikadan foydalanib, talabalarning kasbiy ko‘nikmalarini rivojlantirish samaradorligi tekshirildi. Eksperiment natijalari oldingi holat bilan taqqoslanib, o‘zgarishlar darajasi aniqlandi.

Anketalash usuli orqali talabalarning o‘z-o‘zini baholash malakasi, ularning kasbiy faoliyatga bo‘lgan munosabati va motivatsion omillari o‘rganildi. Anketa savollari talabalarning “4K” modeli elementlarini qanchalik o‘zlashtirganlik darajasini aniqlashga qaratildi. Kuzatish usulida esa talabalarning dars jarayonida faoliyati, ingliz tilida muloqot qilish mahorati, jamoada ishlash qobiliyati va innovatsion yondashuvlarni qo‘llash darajasi baholandi. Kuzatish natijalari talabalarning kasbiy tayyorgarlik darajasini aniqroq tasavvur qilishga imkon berdi.

Kommunikativlik – Ingliz tili o‘qituvchisi o‘zining kommunikativ mahoratini doimo oshirib borishi kerak. Kommunikativlikni rivojlantirish uchun talabalarga muloqot madaniyati, tilning amaliy jihatlarini o‘rgatish va ularning nutq faoliyatini rivojlantirishga qaratilgan mashg‘ulotlar tashkil etiladi. Nutq faoliyatini rivojlantirishda diqqat markazida talabalarning tinglash, so‘zlash, o‘qish va yozish ko‘nikmalarining muvozanatli rivojlanishi turadi. Masalan, talabalarga rolli o‘yinlar orqali real hayotiy vaziyatlarda ingliz tilida suhbatlashishni o‘rgatish yoki audio ma’lumotlar asosida tinglash mashqlari tashkil etish samarali usullardan hisoblanadi. Bundan tashqari, talabalarga “pair work” (juftlikda ishlash) va “group work” (guruhda ishlash) ko‘rinishidagi mashqlar berish ularning bir-biri bilan muloqot qilish ko‘nikmalarini oshiradi. Muloqot madaniyatini o‘rgatishda esa talabalar o‘rtasidagi hurmat va o‘zaro tushunishga e’tibor berish lozim. Tadqiqot natijalariga ko‘ra, kommunikativ ko‘nikmalari yaxshi rivojlangan talabalar dars

jarayonida o‘quvchilarning qiziqishini saqlash va ularga yangi bilimlarni osonroq yetkazishda ancha yuqori natijalar ko‘rsatgan.

Muhokama

Bo‘lajak ingliz tili o‘qituvchilarini “4K” modeli asosida tayyorlashda pedagogik-psixologik xususiyatlarga alohida e’tibor berish talabalarning kasbiy rivojlanishiga ijobiy ta’sir ko‘rsatadi. Pedagogik-psixologik xususiyatlar talabalarning motivatsiya darajasini, individual psixologik xarakteristikalarini va ularning shaxsiy salohiyatini hisobga olgan holda shakllanadi. Zamonaviy ta’lim jarayonida talabalar faqat nazariy bilimlarga ega bo‘lish emas, balki amaliyotga yo‘naltirilgan mahoratlarni egallash ham muhim ahamiyatga ega. Bu jarayonda “4K” modelining har bir elementi talabalarning kasbiy kompetentsiyasini shakllantirishda mustahkam poydevor sifatida xizmat qiladi.

Kompetentlik jihatidan qaraganda, talabalarning tilshunoslik sohasidagi chuqur bilimlari va amaliy ko‘nikmalari o‘z navbatida muloqot madaniyatiga va metodikaga bog‘liqdir. Masalan, ingliz tili grammatikasi, fonetikasi va leksikasini o‘zlashtirishda talabalar nazariy bilimlarni amaliy mashg‘ulotlar orqali mustahkamlashga imkon beradi. Bunday yondashuv natijasida talabalar darslarni samarali tashkil etish va o‘quvchilarning bilimlarini chuqurlashtirish uchun innovatsion usullardan foydalanishga o‘rgatiladi. Tadqiqot natijalariga ko‘ra, bunday mashg‘ulotlar talabalarning o‘qitish mahoratini o‘rtacha 25% ga oshirganligi aniqlandi.

Tadqiqot natijalariga ko‘ra, “4K” modeli asosida tayyorlangan talabalar o‘rtacha 30% ga o‘z kasbiy ko‘nikmalarini oshirgan. Ular darslarni tashkil etish, o‘quvchilar bilan muloqot qilish va innovatsion yondashuvlardan foydalanish bo‘yicha yuqori natijalar ko‘rsatgan.

Xulosa

Bo‘lajak ingliz tili o‘qituvchilarining kasbiy ko‘nikmalarini “4K” modeli asosida rivojlantirish metodikasini takomillashtirish zamonaviy ta’lim talablari va pedagogik-psixologik xususiyatlarga mos keladigan samarali yondashuv hisoblanadi. Kompetentlik, kreativlik, kommunikativlik va ko‘rgazmalilik asosida tashkil etilgan ta’lim jarayoni talabalarning bilim sifatini oshirishga, ularning mustaqil faoliyatini rag‘batlantirishga va zamonaviy talablarga javob beradigan mutaxassislar tayyorlashga imkon beradi.

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BEYOND THE CHALKBOARD: HOW MODERN EDUCATIONAL TECHNOLOGIES ARE RESHAPING LEARNING

Abstract. *This article analyzes the impact of modern educational technologies (EdTech) on learning. It details how tools like interactive platforms, AI, and collaborative environments enhance student engagement, personalize pathways, and broaden resource access, fostering key skills. However, it also addresses crucial challenges including the digital divide, teacher training needs, data privacy, and potential distractions. The piece argues that effective and ethical EdTech integration—requiring strategic planning, pedagogical focus, equity, and evaluation—is essential to positively transform education.*

Keywords: *Educational Technology, EdTech, Learning Process, Modern Education, Digital Learning, Personalized Learning,*

The traditional image of a classroom – rows of desks facing a chalkboard, a teacher orchestrating learning through lectures and textbooks – is rapidly yielding to a more dynamic, interconnected, and technologically infused landscape. While the core goals of education remain, the tools and methodologies are undergoing a profound transformation. Laptops, tablets, interactive whiteboards, sophisticated educational software suites, comprehensive Learning Management Systems (LMS), cloud-based platforms, and immersive technologies like virtual reality (VR) and augmented reality (AR) are no longer futuristic concepts but increasingly integral components of the daily learning experience. This pervasive integration of modern educational technologies (EdTech) is having a deep and multifaceted impact, reshaping not only *how* students learn and teachers instruct, but also influencing curriculum design, assessment methods, and the very definition of a learning environment.

One of the most celebrated impacts of EdTech lies in its potential to significantly enhance student engagement and enable truly personalized learning journeys. Static, one-dimensional textbooks are being powerfully supplemented or even replaced by interactive simulations that allow experimentation without real-world consequences, engaging educational games that make learning fun (gamification), high-quality multimedia content catering to diverse interests, and virtual field trips that transport students to distant lands or historical periods. These

tools inherently cater to a wider spectrum of learning styles – visual, auditory, reading/writing, and kinesthetic – making complex concepts more accessible, memorable, and enjoyable. Furthermore, the rise of adaptive learning platforms, often powered by artificial intelligence (AI), represents a paradigm shift. These systems can assess a student's understanding in real-time, identifying knowledge gaps and strengths, then automatically tailoring the difficulty, pace, and type of content presented to individual needs. This personalized approach empowers students to progress at their own optimal speed, receiving targeted support where they struggle and challenging extensions in areas they master, effectively moving education away from the constraints of a one-size-fits-all model towards genuine differentiation and fostering greater student agency.

EdTech also dramatically expands access to a universe of information and diverse learning resources. The internet provides students and teachers with a virtually limitless library at their fingertips, breaking down the physical and financial barriers often associated with traditional classroom resources. Open Educational Resources (OERs), Massive Open Online Courses (MOOCs), specialized digital archives, online journals, and expert databases offer a wealth of diverse perspectives and cutting-edge information often unavailable or slow to appear in standard printed curricula. For students in remote geographical locations, those with chronic illnesses, or individuals facing physical mobility limitations, technology serves as a vital bridge, providing access to quality educational opportunities, specialized instruction, and peer interaction that might otherwise be impossible. Critically, assistive technologies continue to evolve, further leveling the playing field for students with diverse learning needs and disabilities by offering tools like text-to-speech, speech-to-text, screen readers, magnification software, alternative input devices, and customizable interfaces.

Beyond individual learning, EdTech significantly fosters the development of collaboration, communication, and digital citizenship skills, which are crucial for success in the interconnected 21st-century workforce and society. Cloud-based platforms (like Google Workspace or Microsoft 365 Education) allow students to co-create documents, presentations, and projects in real-time, regardless of their physical location, learning valuable teamwork and negotiation skills. Online discussion forums, educational social media platforms, video conferencing tools, and shared digital workspaces encourage vibrant peer-to-peer learning, constructive debate, and the ability to articulate ideas clearly in digital formats. Teachers can leverage these tools to provide more frequent and targeted feedback, facilitate engaging asynchronous or synchronous group discussions, host virtual guest speakers, and connect their classrooms with peers or experts across the globe, broadening horizons and cultural understanding. This collaborative environment inherently necessitates the development of digital citizenship – understanding responsible online behavior, respecting intellectual property, and navigating online interactions safely and ethically.

However, the widespread integration of EdTech is not a panacea and presents significant challenges that demand careful consideration and proactive solutions.

The digital divide remains a critical barrier to equity; disparities in access to reliable, high-speed internet, appropriate devices (laptops, tablets), and foundational digital literacy skills among students and sometimes even educators can exacerbate existing socioeconomic inequalities. Simply distributing devices is insufficient. Effective implementation requires substantial and ongoing professional development for teachers, focusing not just on the technical operation of tools, but crucially on pedagogical strategies for integrating technology meaningfully to enhance learning outcomes. The role of the teacher itself shifts – often from a primary knowledge dispenser to a facilitator, curator, learning designer, and coach – requiring new skillsets and support.

Furthermore, the increased reliance on digital platforms raises paramount concerns around data privacy and security. Schools and EdTech providers must implement robust policies, transparent practices, and strong technical safeguards to protect sensitive student information from breaches and misuse. The use of AI in adaptive learning also brings concerns about algorithmic bias potentially perpetuating inequalities if not carefully designed and audited. Moreover, the ubiquitous presence of devices introduces the potential for distraction and necessitates strategies for developing student focus and self-regulation. There's also a valid concern about the risk of over-reliance on technology potentially hindering the development of other fundamental skills, such as deep reading concentration, critical thinking independent of digital prompts, effective handwriting, and nuanced face-to-face social interaction. Balancing screen time with other activities for digital well-being is another growing consideration.

Conclusion

Modern educational technology holds immense and undeniable potential to fundamentally transform the learning process, making it more engaging, personalized, equitable, accessible, and collaborative than ever before. It offers a powerful toolkit to equip students with the knowledge, skills, and adaptability required for a future increasingly defined by rapid technological advancement and digital interaction. Yet, realizing this transformative potential is not automatic; it demands a thoughtful, strategic, and equitable approach. The focus must consistently remain on sound pedagogy, utilizing technology as a versatile *tool* to amplify effective teaching and deepen learning, rather than allowing it to become an end in itself. Proactively addressing the complex challenges of the digital divide, ensuring robust teacher training and support, safeguarding privacy, managing distractions ethically, maintaining a balance with fundamental non-digital skills, and committing to ongoing evaluation are all critical imperatives. When implemented effectively, ethically, and equitably, EdTech can indeed move education far beyond the limitations of the traditional chalkboard, empowering both students and educators to not just navigate, but actively shape the complexities and opportunities of the modern world.

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SUT EMZUVCHILARDA SIYDIK QOPINING INTRAMURAL APPARATINING AFFERENT NEYRONLARI

Annotatsiya: *Maqolada turli xil kumushlash usullaridan foydalangan holda siydik pufagi ganglionlarining nozik tuzilishi o'rganiladi (Bilshovskiy Gross, Lavrentiev, Kampos, Rasskazovo modifikatsiyalarida). Mushuk va itlarning siydik pufagining intrabursal apparatida biz kashf etgan retseptor neyronlari mahalliy refleks yoylarini shakllantirishda ishtirok etib, ushbu organ qisqarishining ma'lum avtomatizmini ta'minlaydi, uning umumiy funktsiyasini oshiradi.*

Kalit so'zlar: *it, siydik pufagi, sutemizuvchilar, nerv hujayralari, mushuk, dendritlar, retseptorlar, hujayra.*

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AFFERENT NEURONS OF THE INTRAMURAL APPARATUS OF THE URINARY BLADDER OF SOME MAMMALS

Abstract: *The article studies the fine structure of the ganglia of the urinary bladder using various silvering methods (Bilshovsky in modifications of Gross, Lavrentiev, Kampos, Rasskazovo). The receptor neurons discovered by us in the intrabursal apparatus of the urinary bladder of cats and dogs participate in the formation of local reflex arcs, providing some automatism of contractions of this organ, enhancing its overall function.*

Key words*: dog, bladder, mammal, nerve cells, cat, dendrites, receptors, cell.*

Kirish. Afferent neyronlar inson embrionlari va yangi tug'ilgan chaqaloqlarning qovuqida tasvirlangan. Kattalar (hayvonlar va odamlar) qovug'idagi retseptor neyronlarining morfologiyasi bo'yicha maxsus ishlar topilmadi [1,4,5]. N.G. Kolosov yozganidek, vegetativ nerv sistemasidagi afferent elementlar masalasi muhim ahamiyatga ega [2,3]. Uning ta'kidlashicha, bu masalaning qanday hal qilinishiga ko'ra, nerv sistemasining tuzilishini, demak, uning funksional ahamiyatini tushunishimiz bog'liq. Buni hisobga olib, biz ushbu tadqiqotni boshladik.

Tadqiqot maqsadi. Tajriba hayvonlarida siydik qopining intramural nerv tolalarining afferent neyronlarini gistologik tuzilishi o`rganish.

Tadqiqot materiallari va usullari. Tadqiqot uchun material sifatida turli yoshdagi itlar va mushuklarning qovuqlari umumiy narkoz ta`sirida olindi. Biz qovuq gangliylarining nozik tuzilishini kumushlashning turli usullari (Bilshovskiy Gross, Lavrentev, Kampos, Rasskazov modifikatsiyalarida) yordamida o'rgandik.

Tadqiqot natijalari. Qovuq gangliylarini o'rgangan ko'plab mualliflar bilan bir qatorda, biz ham bu gangliyalarning ko'p hujayralari tipik motor neyronlar, Dogel I tipidagi hujayralar ekanligini aniqladik. Ammo ulardan tashqari, mushuklar va itlarning qovuq gangliylarida turli yosh davrlarida biz retseptor neyronlarining morfologik belgilariga ega bo'lgan hujayralarni ham aniqladik.Bunday hujayralarni biz asab tolalari yo'lida yakka holda va qovuq gangliylari tarkibida uchratdik. Nerv hujayralarning barcha 4 ta o'simtasi uzun va tolalarga yo'naltirilgan, ular orasida neyritni dendritdan ajratishning iloji yo'q. A.S. Dogelning o'zi sutemizuvchilarning ichaklaridagi II tipdagi hujayralarni gangliylardan tashqariga chiqadigan uzun dendritlar bilan bog'lagan. U bu hujayralarning ba'zi dendritlari ichak to'qimalarida retseptor apparatlari bilan tugashi kerak deb taxmin qilgan. Keyinchalik sutemizuvchilarning ichaklaridagi retseptor oxirlari Dogel II tipidagi hujayralarning uzun dendritlari bilan hosil bo'lganligini bir qancha olimlar tomonidan tasvirlangan. Dogel II tipidagi hujayralarni kuzatish asosida ba'zi zamonaviy tadqiqotchilar ushbu hujayralar uzun dendritlardan tashqari qisqa dendritlarga ham ega bo'lishi mumkin va bu ikki turdagi o'simtalar retseptor tuzilmalari bilan tugashi mumkin degan xulosaga kelishdi. Kalta dendritlar gangliylar ichida yoki ularning yaqinida tugaydi, ba'zi uzun dendritlar esa tugunlardan uzoqda, organlarning turli to'qimalarida joylashgan retseptor apparatlari bilan tugashi mumkin. Dogel II tipidagi uzun dendritli hujayralardan tashqari, biz mushuklar va itlarning qovuqida qisqa dendritli nerv hujayralarini ham topdik, ularning tarmoqlari qovuqning turli to'qimalarida va uning gangliylari hududida sezgir oxirlarni (maxsus kelib chiqishi retseptorlariga o'xshash) hosil qiladi. Cho'ziq shakldagi hujayra 4 ta o'simtaga ega, ulardan 2 tasi turli tolalar tomon yo'naltirilgan. Uchinchi o'simta bir necha marta dixotomik tarzda tarvaqaylab, ingichka terminallarga bo'linadi, ular birgalikda qovuqning silliq mushak to'qimasida sudraluvchi buta shaklida retseptor apparatini hosil qiladi. Retseptorning oxirgi shoxlari silliq mushak hujayralari yo'nalishiga mos keladi va ularda kichik qalinlashuvlar bilan tugaydi. Bizga 6 oylik kuchukning siydik pufagidan olingan bitta hujayra taqdim etildi. U eksentrik joylashgan yadrosi bilan cho'ziq shaklga ega. Barcha to'rtta o'simtasi poyaga yo'naltirilgan. Ulardan biri shoxchaga ega bo'lib, u bir necha marta dixotomik ravishda shoxlanadi va shoxlanish joylarida nozik fibrillyar maydonchalarni hosil qiladi. Takroriy shoxlanishlar natijasida nozik ixcham buta shaklidagi oddiy retseptor apparati hosil bo'ladi, uning terminallari kapillyar devorida va uni o'rab turgan biriktiruvchi to'qimalarda tugaydi.

Biz, shuningdek, siydik pufagi gangliylarining stroma qismida retseptor apparatlarini hosil qiluvchi efferent neyronlarni ham aniqladik. Ushbu gangliyaning eng katta va eng differensiallashgan hujayrasi dumaloq shaklga ega va 8 ta o'simtani

o'z ichiga oladi. Ba'zi o'simtalar poyalarga kiradi. Bir o'simta hujayra tanasidan uncha uzoq bo'lmagan joyda shoxlana boshlaydi, uning ingichka shoxchalari gangliya stromasida halqacha bilan tugaydi. O'simta ikki marta dixotomik ravishda shoxlanadi va gangliya elementlari bilan yaqin aloqada bo'lgan uchi tuzilmalari bo'lgan buta shaklida retseptor apparatini hosil qiladi. Biz yuqorida aniqlagan va tavsiflangan hujayralarni retseptor deb hisoblaymiz, birinchidan, ularning dendritlarining shoxlanish xarakteri markaziy kelib chiqishi sezgir uchlarini juda eslatadi; ikkinchidan, ushbu hujayralarning tanasida biz hech qachon peritsellyar apparatlarni topmadik, bu ham ularning retseptor funktsiyasining dalillaridan biridir. Uchinchidan, bitta holatda biz kuchukning siydik pufagida retseptor va samarali neyronlar o'rtasida simpatik aloqani aniqlashga muvaffaq bo'ldik. Ulardan biri kattaroq, to'qroq rangga ega, 5 ta o'simtaga ega. Uning ikkita o'simtasi bir necha marta dixotomik ravishda shoxlanadi va mushak hujayralari yo'nalishi bo'yicha ketadigan juda ingichka "terminal"lari bo'lgan retseptor butasini hosil qiladi. Uning o'simtalaridan biri (neyrit) qo'shni gangliyga yo'naltiriladi va yosh shakllanayotgan neyron (ehtimol, motorli) tanasi bilan aloqa qiladi va uning gelida noto'g'ri shakldagi argentofil plastinkani hosil qiladi.

Xulosa. Klinik kuzatuvlar va eksperimental tadqiqotlar shuni ko'rsatadiki, siydik pufagi markaziy nerv tizimi bilan aloqalari to'liq buzilgan sharoitlarda ham ishlash qobiliyatini saqlab qoladi. Ko'rinishidan, mushuklar va itlarning siydik pufagining intrabursal apparatida aniqlangan retseptor neyronlar ushbu organning umumiy funktsiyasini kuchaytiradigan qisqarishlarning ma'lum avtomatizmini ta'minlab, mahalliy refleks yoylarini shakllantirishda ishtirok etadi. Shunday qilib, bizning kuzatuvlarimiz, boshqa mualliflarning ma'lumotlari bilan bir qatorda, siydik pufagida lokal reflekslarni amalga oshirish mumkinligining ma'lum bir morfologik dalilidir.

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YIRIK SHAHARLARDA TURIZM MUAMMOLARI VA QISHLOQ HUDUDLARI SALOHIYATI YECHIM SIFATIDA (O‘ZBEKISTON MISOLIDA)

Annotatsiya:*O‘zbekistonda turizm barqaror rivojlanib, sayyohlarni, ayniqsa, Samarqand, Buxoro va Toshkent kabi yirik shaharlarda tobora ko‘proq jalb qilmoqda. Bu sayyohlar oqimi bir qator muammolarni keltirib chiqarayotganining natijasidir. Masalan, aholining haddan tashqari ko'pligi, shahar infratuzilmasini yaxshilash. Ekologik muammolar va madaniy salohiyatga oid muammolar soyada qolmoqda. Bundan tashqari, ushbu maqolaning maqsadi O'zbekistonning yirik shaharlarida turizm muammolarini o'rganish va barqaror alternativ sifatida qishloq turizmini rivojlantirish imkoniyatlarini baholashdan iborat.*

Kalit so'zlar: *turizm, O'zbekiston, urbanizatsiya, qishloq joylari, barqaror rivojlanish, infratuzilma, etnoturizm, agroturizm.*

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PROBLEMS OF TOURISM IN BIG CITIES AND THE POTENTIAL OF RURAL AREAS AS A SOLUTION (ON THE EXAMPLE OF UZBEKISTAN)

Abstract :*Tourism in Uzbekistan is growing steadily and attracting more and more tourists, especially in large cities such as Samarkand, Bukhara and Tashkent. This is the result of the fact that the tourist flow leads to a number of problems. For example, overcrowding, improvement of urban infrastructure. Environmental problems and problems with cultural potential remain in the shadows. In addition, the purpose of this article is to study the problems of tourism in large cities of Uzbekistan and assess the potential for the development of rural tourism as a sustainable alternative.*

Key words: *tourism, Uzbekistan, urbanization, rural areas, sustainable development, infrastructure, ethno-tourism, agro tourism.*

Introduction

The tourism industry may be one of the most promising sectors of the economy, as large-scale reforms have been implemented in the country since 2016, and the state has implemented such reforms as improving the visa regime, developing infrastructure and improving service. The country's tourism GDP has exceeded 5% in recent years.

In Uzbekistan, problems associated with over tourism are also observed, 75 of all foreign tourists visit Samarkand Bukhara and Tashkent. While the rural area, despite its rich cultural and natural heritage, remains in its field of attention due to the lack of infrastructure, such an uneven distribution of tourist flows gives rise to numerous problems such as over tourism, environmental degradation, rising prices, inconveniences associated with traffic jams, lack of transport.

Literature review

Over-tourism is becoming an increasing problem for many countries. According to Koens et al. (2018), too large a flow of tourists leads to problems with prices, overcrowding, citizen dissatisfaction, traffic jams and pollution. These trends are also relevant for Uzbekistan, where the tourist load in cities exceeds the capacity to accommodate them.

The problems associated with over tourism are discussed in the works of Akhmedov (2020), Yusupov (2021), Temirbekova (2022), who point to the lack of hotel infrastructure, transport problems, rising prices for housing and food. Moreover, they point out the damage to the culture and religion of the country.

Methodology

In this work I use mixed methodology - this is an analysis of the strategy in tourism of Uzbekistan for 2017-2024, a qualitative method such as interviews with all representatives of tourism companies such as those who are working in the service sector and tourists as well as 15 local residents also conducted interviews. In such areas as Samarkand Bukhara, rural areas such as Fergana conclusions were made based on rural tourism, conducting an analysis according number of data analysis of the tourism committee for 2018 go 2023.

Interview among representatives of travel agencies

- Professor of Tourism, Tashkent State Economic University.
- Ecotourism consultant co-operates with international projects.
- Director of a travel agency in Samarkand
- Specialist in agro-tourism, Fergana.

Questions:

9. What are the key problems of tourism in major cities of Uzbekistan?
10. What are the socio-economic advantages of rural tourism?
11. What policy measures are needed to develop rural tourism?
12. How can the local population be involved in tourism development?

Summarized answers:

- All respondents noted the imbalance between urban and rural destinations.
- The importance of decentralisation and inclusiveness is emphasised.
- Recommended measures: subsidies, road development, promotion on online platforms.
- One expert suggested the creation of a national platform for booking rural tours.

Result and Discussion

The results of the research on interviews with tourists and local residents were such indicators as problems with hotels and services, because most hotels are overcrowded during the busy period and tourist season, the airport is overloaded, roads require repairs.

Conclusion

In conclusion, we can say that Uzbekistan has a huge potential for development and creation of new tourist destinations for tourists, but there are such problems with infrastructure, communications and digitalization. Everything needs to be carefully studied, finances distributed and personnel trained.

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QASHQADARYO VILOYATI SANOAT TARMOQLARINING GEOGRAFIK XUSUSIYATLARI

Annotatsiya: *Mazkur maqolada Qashqadaryo viloyatdagi asosiy sanoat tarmoqlarining rivojlanish darajasi, yirik korxonalar va ularning faoliyati tahlil qilingan. Maqolada viloyatning neft-gaz, kimyo sanoati, qurilish materiallari ishlab chiqarish, oziq-ovqat sanoati va mashinasozlik kabi sohalarda amalga oshirilgan investitsiyalar va ishlab chiqarish hajmlari haqida batafsil ma'lumotlar keltirilgan.*
Kalit so'zlar: *neft-gaz sanoati, qayta ishlovchi sanoat, transport infratuzilmasi, iqtisodiy tarmoq, sanoat korxonalari, tabiiy resurslar, iqlim omili, geografik joylashuv.*

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GEOGRAPHICAL FEATURES OF INDUSTRIAL SECTORS OF KASHKADARYA REGION

Abstract: *This article analyzes the level of development of the main industrial sectors, large enterprises and their activities in the Kashkadarya region. The article provides detailed information on the investments and production volumes in the region's oil and gas, chemical industry, construction materials production, food industry and mechanical engineering.*
Keywords: *oil and gas industry, processing industry, transport infrastructure, economic sector, industrial enterprises, natural resources, climatic factor, geographical location.*

Kirish. Qashqadaryo viloyati O'zbekistondagi muhim sanoat hududlaridan biri hisoblanadi. Bu viloyat O'zbekistonning janubiy qismida joylashgan bo'lib, tabiiy resurslarga boy hudud sifatida keng tanilgan. Qashqadaryo viloyatining sanoati turli tarmoqlarga ixtisoslashgan bo'lib, neft-gaz sanoati, kimyo sanoati, qurilish materiallari ishlab chiqarish, oziq-ovqat sanoati va mashinasozlik sohalari viloyat iqtisodiyotining asosiy sektorlaridan hisoblanadi. Shu bilan birga,

viloyatning sanoat tarmoqlari faqat mahalliy ehtiyojlarni qondiribgina qolmay, balki eksportga ham mahsulotlar yetkazib beradi. Sanoat korxonalari ko‘p yillik tajribaga ega va zamonaviy texnologiyalarni joriy etish borasida katta muvaffaqiyatlarga erishgan. Viloyat sanoatining asosiy tarmoqlaridan biri neft-gaz sanoati bo‘lib, bu soha O‘zbekistonning energiya resurslarini ishlab chiqarish va qayta ishlashning markazlaridan biri sifatida muhim ahamiyatga ega. Shu bilan birga, viloyat kimyo sanoati, qurilish materiallari ishlab chiqarish, oziq-ovqat sanoati va boshqa sohalarda ham yuqori ishlab chiqarish salohiyatiga ega. Qashqadaryo viloyati sanoatining O‘zbekiston iqtisodiyotidagi o‘rni muhim va o‘sib bormoqda. Viloyatning sanoat mahsulotlari respublika sanoatining muhim qismini tashkil etadi, uning ichki va tashqi bozorlarda o‘rni tobora kengayib bormoqda. Xususan, Muborak gazni qayta ishlash zavodi, Sho‘rtan gaz-kimyo majmuasi, Qarshi sement zavodi va boshqa yirik sanoat korxonalari viloyat iqtisodiyotining poydevoriga aylangan. Ushbu korxonalar O‘zbekistonning energiya, qurilish materiallari va kimyo sanoati sohalariga katta hissa qo‘shadi. Viloyat sanoatining rivojlanishi O‘zbekistonning energetika, qurilish va kimyo sanoati kabi tarmoqlari uchun muhim zamin yaratadi. Qashqadaryo viloyati nafaqat O‘zbekistonning ichki bozoriga, balki qo‘shni davlatlar va xalqaro bozorlarga mahsulotlarni eksport qilishda ham katta o‘rin egallaydi. Shu bilan birga, viloyatning sanoat korxonalari o‘zining samarali ishlab chiqarish tizimi va eksport salohiyati bilan davlat iqtisodiy strategiyasining ustuvor yo‘nalishlaridan biri sifatida e’tirof etilmoqda. Qashqadaryo viloyatining sanoati yil sayin yangi investitsiyalar, zamonaviy texnologiyalar va ilg‘or ishlab chiqarish metodlarini joriy etish orqali rivojlanishda davom etmoqda. Bu esa, viloyatni nafaqat respublika, balki mintaqaviy iqtisodiy o‘sishga katta hissa qo‘shadigan hududga aylantirmoqda.

Asosiy qism. Qashqadaryo viloyati O‘zbekistonning neft va gaz sanoati markazlaridan biri hisoblanadi. Viloyatda ko‘plab neft va gaz konlari joylashgan bo‘lib, bu hududda neft-gaz sanoatining rivojlanishiga katta imkoniyatlar yaratilgan. Muborak gazni qayta ishlash zavodi, Sho‘rtan gaz-kimyo majmuasi, G‘uzor neftni qayta ishlash zavodi kabi yirik sanoat korxonalari viloyatning asosiy iqtisodiy tarmog‘ini tashkil etadi.

Muborak gazni qayta ishlash zavodi – O‘zbekistonning yirik gazni qayta ishlash korxonalari sirasiga kiradi. Ushbu zavod yillik 40 milliard kubometrdan ortiq tabiiy gaz qayta ishlaydi. Zavodning mahsulotlari ichki bozorni to‘ldirib, eksportga ham chiqariladi.

Sho‘rtan gaz-kimyo majmuasi – bu majmua polietilen, polipropilen kabi kimyoviy mahsulotlar ishlab chiqaradi. Bu zavod nafaqat O‘zbekistonning ichki ehtiyojlarini qondirib, balki eksportga ham katta hajmdagi mahsulotlarni chiqaradi.

G‘uzor neftni qayta ishlash zavodi – neftni qayta ishlash orqali dizel yoqilg‘isi va boshqa neft mahsulotlarini ishlab chiqaradi, viloyatning energetika ehtiyojlarini qondirishda muhim o‘rin tutadi.

Qashqadaryo viloyatida qurilish materiallari sanoati keng tarqalgan va viloyatning yirik tarmoqlaridan biriga aylangan. Qurilish materiallari ishlab

chiqarish, ayniqsa, sement, g‘isht va ohakni ishlab chiqarish viloyatda yuqori darajada rivojlangan.

Qarshi sement zavodi – bu zavod yiliga 1,5 million tonna sement ishlab chiqarish quvvatiga ega. Qarshi sement zavodi nafaqat viloyat ichki bozorini, balki boshqa hududlarni ham sement bilan ta’minlaydi.

Kitob tumanidagi qurilish materiallari zavodlari – bu korxonalar g‘isht, ohak va boshqa qurilish materiallari ishlab chiqaradi. Ushbu zavodlar viloyatdagi qurilish loyihalarini amalga oshirishda muhim rol o‘ynaydi.

Qashqadaryo viloyati oziq-ovqat sanoati borasida ham salmoqli yutuqlarga erishgan. Viloyat qishloq xo‘jaligi mahsulotlarini qayta ishlash va eksport qilish borasida katta salohiyatga ega. Oziq-ovqat sanoatining asosiy tarmoqlari sut, go‘sht, un va non ishlab chiqarishdan iborat.

Sut va go‘sht mahsulotlari ishlab chiqarish – viloyatda ko‘plab sut va go‘sht mahsulotlarini ishlab chiqaruvchi korxonalar mavjud. Ushbu mahsulotlar nafaqat ichki bozor, balki qo‘shni davlatlarga ham eksport qilinadi.

Un va non mahsulotlarini qayta ishlash – viloyatda un va non mahsulotlarini ishlab chiqaruvchi ko‘plab korxonalar faoliyat yuritadi. Bu tarmoqda katta salohiyatga ega bo‘lgan sanoat korxonalari mavjud.

Mashinasozlik va metallurgiya sanoati Qashqadaryo viloyatining yana bir rivojlanayotgan tarmog‘idir. Mashinasozlikda asosan texnik jihozlar, avtomobil ehtiyot qismlari va qishloq xo‘jaligi texnikalari ishlab chiqariladi. Viloyatda metallurgiya sanoati ham rivojlanmoqda, bu soha asosan qurilish materiallari ishlab chiqarish va mashinasozlikda ishlatiladigan metall qismlar ishlab chiqarishga yo‘naltirilgan.

Mashinasozlik – viloyatda kichik va o‘rta korxonalar mashinasozlik sohasida faoliyat yuritmoqda. Ular qishloq xo‘jaligi uchun texnikalar, avtomobil ehtiyot qismlarini ishlab chiqaradilar.

Metallurgiya sanoati – viloyatda kichik metallurgiya korxonalari mavjud bo‘lib, ular po‘lat, temir va boshqa metall mahsulotlar ishlab chiqaradi.

Qashqadaryo viloyati tabiiy resurslar bilan boy bo‘lib, bu omil uning sanoat tarmoqlarining shakllanishiga va rivojlanishiga asosiy ta’sir ko‘rsatadi. Neft va gaz resurslari: Viloyatning neft va gaz resurslari sanoatning asosiy rivojlanish omillaridan biridir. Muborak va Sho‘rtan gazni qayta ishlash zavodlari, shuningdek, G‘uzor neftni qayta ishlash zavodi viloyatning iqtisodiy salohiyatini oshirib, neft-gaz sanoatining rivojlanishiga katta hissa qo‘shmoqda. Ushbu resurslar viloyatni energetika sanoatining markaziga aylantirgan. Qurilish materiallari: Qashqadaryo viloyatida sement, g‘isht va ohak kabi qurilish materiallari ishlab chiqarish ishlab chiqarishning iqtisodiy-geografik xususiyatlariga ta’sir qiladi. Viloyatning ba’zi tumanlarida mavjud bo‘lgan tabiiy resurslar (masalan, ohak va g‘isht ishlab chiqarishga kerakli xom ashyo) qurilish materiallari sanoatining rivojlanishiga yordam beradi. Qashqadaryo viloyati transport infratuzilmasi va strategik joylashuvi bilan ajralib turadi. Viloyatning geografik joylashuvi sanoat mahsulotlarini tez va samarali yetkazib berishga imkon yaratadi. Yirik transport yo‘llari: Viloyat yirik transport tarmoqlarining kesishmasida joylashgan. Qarshi,

Muborak, G‘uzor va Kitob kabi shaharlar orqali temir yo‘l va avtomobil yo‘llari o‘tadi. Bu yo‘llar viloyatning sanoat mahsulotlarini boshqa hududlarga yetkazib berishda muhim rol o‘ynaydi. Transport markazlari: Qarshi shahridagi logistika markazlari va temir yo‘l tarmoqlari viloyatning sanoat korxonalari uchun kerakli resurslarni va xom ashyolarni tez va oson olib kelish imkonini beradi. Shu bilan birga, bu tarmoqlar viloyatning eksport salohiyatini oshirishga yordam beradi. Qashqadaryo viloyati ishchi kuchi va malakali mutaxassislarni tayyorlash borasida yaxshi imkoniyatlarga ega. Viloyatdagi sanoat korxonalari, ayniqsa, ishchi kuchining malakasiga tayanadi. Ishchi kuchi: Viloyatning sanoat tarmoqlari uchun zarur bo‘lgan ishchi kuchi mavjud. Qashqadaryo viloyatida ko‘plab o‘rta maxsus va oliy ta’lim muassasalari, shuningdek, texnik va kasbiy ta’lim markazlari mavjud. Bu esa sanoat tarmoqlarining samarali faoliyat yuritishi uchun zarur bo‘lgan mutaxassislarni tayyorlashga imkon yaratadi. Kasbiy ta’lim: Viloyatdagi kasbiy ta’lim muassasalari va malaka oshirish markazlari sanoat korxonalarining ehtiyojlariga mos ravishda mutaxassislar tayyorlaydi. Bu omil ishlab chiqarish jarayonlarini samarali boshqarishga yordam beradi. Qashqadaryo viloyati o‘zining quruq iqlimi va geografik joylashuvi bilan sanoat tarmoqlarining rivojlanishiga qulay sharoit yaratadi. Qurilish materiallari sanoati: Viloyatning quruq va issiq iqlimi sement, g‘isht va ohak kabi qurilish materiallari ishlab chiqarishni qulaylashtiradi. Bu resurslarga boy tumanlarda qurilish materiallari ishlab chiqarish sanoati juda rivojlangan. Energiya ishlab chiqarish: Viloyatning iqlimi va tabiiy resurslarining boyligi energiya ishlab chiqarish uchun qulay sharoit yaratadi. Neft va gaz qazib olish va qayta ishlashda ishtirok etadigan korxonalar viloyatda o‘z faoliyatini samarali yuritadi. Qashqadaryo viloyati sanoat mahsulotlarini nafaqat ichki bozorda, balki tashqi bozorda ham sotish imkoniyatlariga ega. Bu omil viloyatning sanoat tarmoqlarining rivojlanishiga sezilarli ta’sir ko‘rsatadi. Ichki va tashqi bozorlar: Viloyat o‘zining geosiyosiy joylashuvi bilan O‘zbekistonning boshqa hududlari va qo‘shni mamlakatlar bilan savdo-sanoat aloqalariga ega. Masalan, Sho‘rtan gaz-kimyo majmuasining mahsulotlari xalqaro bozorlarda talabgir. Bu, o‘z navbatida, viloyatning iqtisodiy salohiyatini oshirishga yordam beradi. Eksport salohiyati: Qashqadaryo viloyatining eksport salohiyati har yil oshib bormoqda. Viloyatning neft, gaz, kimyo va oziq-ovqat sanoati mahsulotlari nafaqat O‘zbekiston, balki mintaqaviy va xalqaro bozorlar uchun ham muhim ahamiyatga ega. Viloyatning strategik joylashuvi, ayniqsa, uning iqtisodiy-geografik xususiyatlarini yaxshilashga yordam beradi. Viloyatning ko‘plab sanoat tarmoqlari markaziy va janubiy O‘zbekistonni, shuningdek, Afg‘oniston va boshqa qo‘shni davlatlarni o‘z ichiga olgan iqtisodiy zonada joylashgan. Strategik joylashuv: Viloyat yirik transport yo‘llarining kesishmasida joylashgan va bu hududda iqtisodiy faoliyatning kengayishiga imkon yaratadi. Viloyatning geografik joylashuvi nafaqat ichki, balki xalqaro savdo va iqtisodiy aloqalarni rivojlantirishda muhim ahamiyatga ega. Qashqadaryo viloyatining sanoat tarmoqlarining iqtisodiy-geografik xususiyatlari viloyatning iqtisodiy rivojlanishiga, sanoat tarmoqlarining shakllanishiga va istiqboldagi o‘sishiga bevosita ta’sir ko‘rsatadi. Viloyatning tabiiy resurslarga boyligi, yaxshi rivojlangan transport infratuzilmasi, mehnat resurslari va

boshqa geografik omillar sanoatning rivojlanishiga sezilarli hissa qo‘shadi. Shuningdek, viloyatning iqtisodiy-geografik joylashuvi uning sanoat tarmoqlarini strategik jihatdan muvaffaqiyatli rivojlantirishga imkon beradi.

Viloyat sanoatining asosiy ko‘rsatkichlari

	2022- yil	**2023- yil**	**2024- yil yanvar- mart**	**2024- yil yanvar - iyun**	**2024- yil yanvar- sentabr**	**2024- yil yanvar- dekabr**	**2025- yil yanvar- mart**
Sanoat mahsuloti hajmi, mlrd. so`m	22624,4	28767,7	7335,7	17091, 0	28742,7	39488,1	9400,4
Sanoat mahsuloti ishlab chiqarishning o`sish sur`ati, o`tgan yilga nisbatan foizda	110,1	107,4	107,7	107,8	108,0	108,0	105,7
shu jumladan:							
Qazib oluvchi sanoat	1715,2	1593,3	362,9	731,9	1274,6	1850,6	518,9
Qayta ishlovchi sanoat	15352,2	22672,6	5610,4	13767, 7	23446,9	32080,1	6757,2

1-jadval manba; qashstat.uz

Xulosa. Qashqadaryo viloyati O‘zbekistonning yirik sanoat hududlaridan biri bo‘lib, uning iqtisodiy salohiyati yil sayin rivojlanib bormoqda. Viloyatdagi sanoat tarmoqlari, jumladan, neft-gaz, kimyo, qurilish materiallari, oziq-ovqat sanoati va mashinasozlik sohalari mamlakat iqtisodiyotida muhim o‘rin egallaydi. Viloyatning tabiiy resurslarga boyligi, transport infratuzilmasining rivojlanishi va malakali ishchi kuchining mavjudligi sanoatning o‘sishiga mustahkam zamin yaratmoqda.

Viloyatdagi yirik korxonalar, xususan, Muborak gazni qayta ishlash zavodi, Sho‘rtan gaz-kimyo majmuasi, Qarshi sement zavodi va oziq-ovqat sanoati korxonalari viloyatning sanoat salohiyatini yanada oshirib, O‘zbekistonning boshqa hududlariga ham eksport imkoniyatlarini kengaytirmoqda. Shuningdek, kimyo sanoati, qurilish materiallari ishlab chiqarish va oziq-ovqat sanoatining kengayishi viloyatning iqtisodiy barqarorligini ta’minlaydi. Bundan tashqari, viloyatda sanoat tarmoqlarining rivojlanishi, transport va kommunal infratuzilmaning yaxshilanishi hamda ishchi kuchining malakasini oshirishga qaratilgan dasturlar viloyatning kelajakdagi iqtisodiy rivojlanishiga katta turtki bo‘ladi. Qashqadaryo viloyati, ayniqsa, energetika, kimyo sanoati va qurilish materiallari ishlab chiqarish sohalarida o‘z salohiyatini yanada mustahkamlab, O‘zbekistonning sanoat salohiyatiga katta hissa qo‘shishda davom etadi. Viloyat sanoati nafaqat ichki bozorda, balki xalqaro bozorlarda ham o‘z o‘rnini mustahkamlashga qaratilgan

strategiyalarni amalga oshirishni davom ettiradi, bu esa uning iqtisodiy jihatdan rivojlanishiga yordam beradi.

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TYPES AND CLASSIFICATION OF DIGITAL TOOLS

Abstract*: Digital tools are fundamental to academic work, communication, and professional productivity. However, the terminology and classification of these tools vary depending on the context and usage. This article aims to synthesize current academic perspectives to provide a clear and updated classification of digital tools. Drawing on literature from educational technology, computer science, and information management, the study identifies key types and properties of digital tools, exploring their implications for research and practice.*

Key words: *digital tools, classification, educational technology, productivity software, online services*

Introduction

The increasing integration of digital technologies in professional and academic fields has made digital tools an essential part of everyday work. However, the definition of what constitutes a digital tool and how to classify it is still evolving. Understanding the classifications can improve users' ability to select appropriate technologies for specific tasks, whether in education, research, business, or personal development. Recent studies have examined these tools in different ways, proposing functional, educational, and technical classifications (Schcolnik, 2018; Hillmayr et al., 2020). This paper reviews these approaches and offers a consolidated perspective.

Methods

To develop a robust understanding of the topic, this article reviews peer-reviewed journal articles published between 2018 and 2024. Academic databases such as ScienceDirect, Springer, and ResearchGate were searched using keywords like "digital tool classification", "types of digital technologies", and "educational technology tools". Selected papers were analyzed qualitatively, focusing on how they define and categorize digital tools in different domains. The review includes literature from computer science, education, and information systems.

Results

Recent studies show that digital tools can be understood and grouped differently, depending on their purpose, where they are used, and how they work. One common approach is to look at their function. Some tools mainly help users find or share information, such as e-learning platforms or online libraries. Others help people complete tasks more easily, such as writing software, planners, or scheduling apps. Many tools today serve to make communication easier, like Zoom

or WhatsApp, especially for teamwork. Schcolnik (2018) suggests a useful way to organize digital tools by dividing them into four main categories: language tools, research tools, organizational tools, and collaboration tools. Language tools support writing and editing, including grammar checkers, dictionaries, and translation apps. Research tools are useful for collecting academic sources and managing references, such as databases or citation managers. Tools for organization, like calendars or mind maps, help users plan their time and structure their ideas. Collaboration tools are those that let several people work on a document or project together, often in real time, for example, shared documents or group work platforms. These categories help us understand how digital tools are designed not only to do technical tasks, but also to support thinking, learning, and working together in both education and professional life.

In the educational context, Hillmayr et al. (2020) conducted a meta-analysis demonstrating how digital tools like simulations, tutorials, and interactive modules improve science and mathematics education when used in a structured environment. They argue that tools aligned with curricular goals lead to better learning outcomes than those used independently. Similarly, Alordiah et al. (2023) explored the awareness and actual use of digital research tools among university staff and found that while awareness was generally high, actual usage was often limited by lack of training or access.

On a broader technological level, Genz, Janser, and Lehmer (2019) propose a typology based on how digital technologies are embedded in work environments. They distinguish between operational tools (for example, customer service software), analytical tools (for example, data dashboards), and automation tools (for example, robotic process automation). These categories overlap with, but are not identical to, those used in academic or pedagogical settings. The focus here is on the labor market and the evolving relationship between technology and human skill.

An important but sometimes overlooked aspect is the characteristics of the tools themselves. These include their mode of delivery (web-based or installed), the scale of use (individual or institutional), and trialability, meaning how easy it is to experiment with the tool before fully adopting it. These features influence whether a tool is widely accepted. Emerald Publishing (2023) emphasizes that researchers often adopt tools that are free to try and compatible with existing systems, such as citation managers or online writing assistants.

Discussion

The reviewed literature reveals that there is no single system for classifying digital tools; instead, the framework often depends on context. Educational researchers focus on how tools impact pedagogy, computer scientists on how tools operate, and social scientists on how people interact with them. Despite these differences, several themes emerge. First, most tools serve either a content-based, task-based, or communication-based purpose. Second, their effectiveness depends not only on their design but also on the user's familiarity and the institutional support provided (Alordiah et al., 2023; Hillmayr et al., 2020).

Third, tool adoption also reflects socioeconomic and geographic disparities. Genz et al. (2019) found that access to newer digital technologies correlates with higher wages in Germany, pointing to broader implications for digital inequality. Finally, integration remains a challenge. Even with excellent tools, educators and researchers may struggle to incorporate them into their workflow due to lack of training, complexity, or resistance to change.

Conclusion

The classification of digital tools is a complex but necessary endeavor in a world where digital technologies are deeply embedded in daily academic, professional, and personal activities. This article has reviewed multiple frameworks to highlight how digital tools can be grouped according to their function, domain of use, and inherent characteristics. While distinctions exist across fields such as education, labor, and research, common themes such as usability, accessibility, and contextual integration remain central.

The analysis shows that successful use of digital tools depends not only on their technical capabilities but also on user competence, institutional support, and broader socio-technical environments. As technologies evolve, new classifications will emerge, and researchers and practitioners must remain adaptive. Future work should focus on dynamic frameworks that accommodate technological change and promote inclusive access, especially in underrepresented regions and sectors.

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OBSTACLES FACING DEVELOPING NATIONS' EDUCATIONAL SYSTEMS AND POSSIBLE SOLUTIONS

Annotation: *This article examines strategies for enhancing the quality of education in developing countries by drawing on successful foreign experiences. It highlights key challenges, including inadequate teacher training, outdated curricula, poor infrastructure, and limited access to technology. The study examines education systems in Finland, Singapore, Germany, and the United States, identifying best practices in teacher training, curriculum reform, vocational education, and the integration of technology. Policy recommendations include investing in teacher development, modernizing curricula, enhancing digital learning, fostering public-private partnerships, and increasing education funding. By implementing these strategies, developing nations can significantly improve their education systems and boost socio-economic development.*

Key Words: *Education quality, developing countries, teacher training, curriculum reform, technology integration, digital learning, policy recommendations, and socio-economic development.*

Obstacles Facing Developing Nations' Educational Systems and Possible Solutions...

"The government that economizes on education will build prisons."

Education is a key driver of economic growth and social progress. However, many developing countries struggle with inadequate education systems that fail to equip students with the necessary knowledge and skills for the modern world. Issues such as poor infrastructure, lack of qualified teachers, outdated curricula, and insufficient government funding hinder educational progress. Addressing these challenges requires learning from successful foreign models and implementing best practices that have proven effective in developed countries.

This article explores how developing countries can improve the quality of education by adopting foreign experiences. It examines strategies such as teacher training programs, curriculum reforms, technology integration, and policy frameworks that have significantly enhanced education systems in countries like Finland, Singapore, Germany, and the United States. By understanding these approaches, policymakers in developing nations can formulate strategies to enhance their education sectors.

Challenges in the Education Systems of Developing Countries.

It should be noted, that the most significant challenge is the shortage of qualified teachers. Many educators lack the necessary pedagogical skills, subject knowledge, and professional development opportunities. This issue is further exacerbated by low salaries, poor working conditions, especially in rural areas, and

a lack of incentives to attract and retain talented individuals in the teaching profession.

The next challenge is insufficient infrastructure, which is also strongly felt in far districts, where even good-quality chalk is an option, and a huge amount of schools suffer from overcrowded classrooms, a lack of electricity, and poor sanitation facilities. This directly affects students' ability to learn effectively.

The next obstacle is the curriculum that does not align with modern economic and technological demands. It often focuses on rote memorization rather than critical thinking, problem-solving, and practical skills. As a result, students graduate without the competencies needed to succeed in the workforce, contributing to high unemployment rates. As a side note, here I have to mention that in Uzbekistan, with the help of innovative policy of new educational authorities in 2020, the curriculum has changed, and a gigantic shift happened in the structure of education patterns, and the 4C's Model is included in education.

The following challenges faced by the citizens of developing countries are low Government investment and poor policy implementation. Education budgets are often insufficient to cover essential expenses such as teacher salaries, infrastructure development, and learning materials. Corruption, mismanagement, and inefficient use of funds further weaken the education system. Additionally, education policies are sometimes poorly designed or not effectively implemented, leading to minimal impact.

As I mentioned above, the lack of learning materials, such as digital tools that provide interactive classrooms and vivid lessons, cannot occur in an environment with limited access to technology. Many schools lack computers, internet connectivity, and digital learning materials, preventing students from benefiting from modern teaching methodologies and online educational resources. Because digital tools and the internet have revolutionized education in many developed countries, the younger generation is being raised as digital natives, and they are mentally prepared for the job market in terms of effectively using computer technology. Yet access to internet resources remains limited in developing nations, which limits students' opportunities to gain good job positions and flexibility in terms of IT.

It is time to look through the lessons from Foreign Education Systems, to understand what works well for them and what can be adopted into the developing countries' education system.

Let us start with Finland! Why? Because the education system is considered one of the best in the world due to its emphasis on high-quality teachers. The key aspect that developing countries can adopt is a selective teacher training policy. Finland requires teachers to hold a master's degree and undergo rigorous training. Developing countries can improve teacher quality by establishing competitive teacher training programs and providing scholarships to attract talented individuals into the profession.

Finnish teachers have significant control over their curriculum and teaching methods, allowing them to adapt lessons to students' needs. So, providing teachers

in developing countries more autonomy and reducing bureaucratic control can enhance teaching effectiveness.

The recipe for success is Continuous Professional Development. Ongoing teacher training programs help educators stay updated with modern pedagogical techniques. Governments should invest in regular professional development workshops and peer-learning programs. And that exact steps are implemented in the education system of Uzbekistan right now.

The next country that is worth mentioning is Singapore. Its education system focuses on developing students' critical thinking and practical skills. Key strategies include Curriculum Flexibility. It means Singapore regularly updates its curriculum to align with technological advancements and labor market needs. Developing countries should prioritize curriculum reforms that emphasize STEM (Science, Technology, Engineering, and Mathematics) education and vocational training.

Singaporean schools encourage hands-on learning through projects and real-world applications. Schools in developing countries can adopt similar approaches to enhance student engagement and improve problem-solving skills.

Bilingual Education: Singapore places a strong emphasis on English proficiency while preserving students' native languages. Implementing bilingual education policies can help students in developing countries access global knowledge while maintaining their cultural identity.

Vocational Education and Industry Collaboration in Germany should also be the role model for developing countries. Germany's dual education system, which combines classroom instruction with practical work experience, has been highly successful in preparing students for the workforce. Developing countries can benefit from establishing vocational schools and apprenticeship programs. Partnerships with industries can help bridge the gap between education and employment. Collaboration between the government, educational institutions, and private sector companies can provide funding, resources, and expertise to improve technical and vocational education.

Work-Based Learning experience provides one with invaluable background and helps in gaining expertise and mastery. Encouraging internships and apprenticeships can equip students with real-world skills, making them more employable upon graduation.

The experience in Technology Integration in Education of the United States must have been in strategies of developing countries, due to the fact that it has effectively leveraged technology to enhance learning. Expanding access to digital learning platforms can help students in remote areas access quality education. Governments should invest in affordable internet connectivity and provide schools with computers and tablets. A combination of traditional classroom teaching methods with online resources can make learning more interactive and engaging not only for students but also for teachers. But, for implementation of that strategy educational institutions first should turn their focus on teachers IT Training. Teachers should be trained to use digital tools effectively, ensuring that technology enhances rather than replaces traditional teaching methods.

Possible solutions …

Taking all of the above into account, in order to improve education policies that will lead to better quality education in developing countries, the CPD program should include suggestions such as investing in teacher training and incentives, which means creating competitive teacher training programs and providing scholarships to those who perform well. Preparing teachers to use educational technology effectively is also the number one priority, as it is necessary to keep a finger on the pulse, as the modern teacher has to teach technologically savvy students who have grown up in a digital environment. Hence, the approach to presentation of topic during the lesson should take into account the use of modern technology and artificial intelligence.

To improve the educational environment, steps toward for the modernization of the curricula and teaching methods should be taken. Attention should be paid to improving school infrastructure and learning resources, including libraries and laboratories, digital technology and uninterrupted Internet access. Aligning curricula with industry needs with a focus on STEM and vocational training. The introduction of a bilingual education system for global competitiveness, which has been successfully implemented in Presidential Schools throughout Uzbekistan, has met expectations and clearly demonstrated its effectiveness.

In general, improving education in developing countries requires a multifaceted approach that focuses on improving teaching quality, curriculum relevance, infrastructure, technology integration, and policy effectiveness. By studying successful foreign models of education, governments can learn from best practices and adapt them to their specific needs. Investments in teacher training, modern curricula, digital learning tools, and partnerships with industry can create a more effective education system that prepares students for the demands of the global economy. With the right policies and investments, developing countries can significantly improve the quality of education and contribute to long-term socio-economic development.

Conclusion

Improving the quality of education in developing countries requires a comprehensive approach that addresses key systemic challenges, including teacher shortages, outdated curricula, inadequate infrastructure, and limited access to technology. By examining successful foreign education models, such as those in Finland, Singapore, Germany, and the United States, developing nations can adopt best practices tailored to their specific contexts.

Investing in teacher training and professional development is crucial for ensuring high-quality instruction. Modernizing curricula to emphasize critical thinking, STEM education, and vocational training can better prepare students for the workforce. Integrating technology into education can expand access to learning resources and enhance teaching effectiveness. Additionally, fostering public-private partnerships can provide much-needed funding and expertise to improve education infrastructure and employment-oriented training programs.

Governments in developing countries must also prioritize education funding and ensure the effective implementation of policies to achieve long-term improvements. Through strategic investments and well-structured reforms, developing nations can establish more resilient and equitable education systems, ultimately enhancing their economic growth and social development.

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BIG DATA ANALYTICS FOR ENHANCING OPERATIONAL EFFICIENCY IN SERVICE SECTOR

Annotation*:The emergence of big data analytics has opened new avenues for operational optimization in the service sector. This study explores how organizations in industries such as healthcare, banking, retail, and hospitality utilize big data tools to improve service delivery, reduce costs, and enhance decision-making. By combining a systematic literature review with case studies of data-driven service enterprises, the research identifies key application areas including customer behavior prediction, resource allocation, and real-time performance monitoring. The findings suggest that while big data analytics significantly enhances operational efficiency, its success depends on data quality, organizational readiness, and the integration of analytical insights into core business processes.*

Keywords*: Big Data; Operational Efficiency; Service Sector; Predictive Analytics; Data-Driven Decision-Making; Business Intelligence; Digital Transformation.*

Introduction

The rapid growth in data generation from digital platforms, sensors, customer interactions, and enterprise systems has given rise to the era of big data. Defined by its volume, velocity, variety, and veracity, big data has become a strategic asset for organizations seeking to remain competitive and efficient.

In the service sector—characterized by customer-centricity, high interaction frequency, and intangible outputs—big data analytics (BDA) has the potential to radically improve operational efficiency. Service enterprises can leverage BDA to

predict customer demand, optimize service delivery routes, manage dynamic pricing, and detect fraud in real time.

Despite growing interest, many service organizations struggle to integrate BDA into their operational workflows effectively. This study aims to investigate how big data analytics is currently applied in the service sector, the measurable benefits it offers, and the critical enablers and barriers to its successful deployment.

Materials and Methods

This study employed a multi-stage research design combining exploratory analysis and empirical validation to assess the role of big data analytics (BDA) in enhancing operational efficiency across various service domains.

Research Design:

A qualitative-dominant approach was used with supplementary quantitative evidence to understand complex interactions between BDA implementation and operational processes. The study followed the Design Science Research Methodology (DSRM) to ensure practical relevance and scientific rigor.

Data Sources:

Primary data: Semi-structured interviews with 12 domain experts, including operations managers, data analysts, and IT officers from healthcare, retail, and financial service sectors.

Secondary data: Operational performance reports, white papers, and publicly available KPI data from selected organizations implementing BDA.

Analytical Framework:

The Capability-Performance Framework was utilized to evaluate how data collection, data processing capabilities, and analytics applications translate into performance improvements. NVivo software was employed to thematically code interview data and identify patterns related to efficiency gains.

Selection Criteria for Case Organizations:

Case organizations were chosen based on the following:

Proven track record of BDA implementation for at least 2 years.

Availability of measurable KPIs pre- and post-adoption.

Willingness to share anonymized operational performance data.

Results and Discussion

Strategic Impact of Big Data Analytics

The study revealed that BDA acts as a strategic enabler rather than just an IT function. Participating organizations reported that analytics-driven decision-making increased managerial responsiveness, streamlined processes, and enabled more proactive operational planning.

Operational Efficiency Improvements by Sector

Sector	Operational Area	Observed Impact
Healthcare	Patient flow management	22% reduction in average patient wait time
Retail	Demand forecasting	27% increase in stock availability
Banking	Risk analytics	31% reduction in loan default rates
Hospitality	Workforce optimization	18% improvement in labor cost efficiency

Implementation Challenges

While efficiency gains were consistent, several barriers to effective BDA deployment emerged:

Data Fragmentation: Disconnected systems across departments limited unified data views.

Low Analytical Maturity: Many firms lacked personnel with advanced data modeling or statistical analysis expertise.

Resistance to Data-Driven Culture: In some cases, managerial reluctance to rely on algorithmic insights hindered adoption.

Cross-Sector Insights

Organizations that integrated BDA into their strategic planning and operations experienced greater ROI than those with limited tactical use.

The use of real-time analytics in logistics and service scheduling proved especially effective in environments with dynamic demand fluctuations.

Predictive analytics was found to be the most valued functionality across all sectors due to its ability to anticipate service demand and optimize resource allocation accordingly.

Conclusion

Big data analytics is proving to be a powerful catalyst for enhancing operational efficiency in the service sector. Organizations that successfully adopt BDA benefit from improved agility, cost control, and customer responsiveness. However, the full potential of big data can only be realized through strategic investments in data infrastructure, workforce capabilities, and change management.

As digital transformation accelerates, service enterprises must prioritize data governance, cross-functional collaboration, and continuous improvement mechanisms to maintain competitiveness. Future research should focus on real-time analytics integration and the development of sector-specific BDA frameworks to further optimize service operations.

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THE ADOPTION OF INTERNET OF THINGS (IOT) IN SERVICE ORGANIZATIONS: BENEFITS AND CHALLENGES

Annotation*:The rapid advancement of Internet of Things (IoT) technologies is reshaping the operational landscape of service organizations worldwide. This study examines the adoption of IoT in service sectors such as healthcare, hospitality, and logistics, focusing on the tangible benefits it offers and the key challenges organizations face during implementation. Using a mixed-methods research design combining a systematic literature review and multiple case study analysis, the study identifies improvements in operational efficiency, customer experience, and data-driven decision-making as major advantages. Conversely, it reveals obstacles related to data security, infrastructure readiness, and integration complexity. The findings underscore the strategic importance of IoT in the digital transformation of service-oriented enterprises and provide practical recommendations for successful implementation.*

Keywords*: Internet of Things (IoT); Service Industry; Digital Transformation; Operational Efficiency; Data Security; Smart Services; Technology Adoption.*

Introduction

In recent years, the Internet of Things (IoT) has emerged as a transformative technology with significant implications for the service sector. IoT refers to the network of interconnected physical devices embedded with sensors, software, and connectivity capabilities that enable them to collect and exchange data. While much of the early literature focused on IoT applications in manufacturing and industrial contexts, there is a growing body of work exploring its use in service-based industries.

Service organizations—ranging from healthcare providers and hotels to transportation and logistics companies—are increasingly leveraging IoT to streamline operations, enhance customer engagement, and enable predictive analytics. For instance, smart sensors can monitor patient vitals in real-time, while IoT-enabled hotel rooms can personalize guest experiences. However, alongside these benefits lie notable challenges, such as data privacy concerns, technical complexity, and integration costs.

This paper investigates the benefits and challenges associated with the adoption of IoT in service organizations. It aims to fill the gap in current literature by providing a sector-specific analysis of how IoT influences operational and strategic outcomes in service delivery.

Materials and Methods

A mixed-methods approach was employed to provide a comprehensive understanding of IoT adoption in service organizations.

Systematic Literature Review (SLR):

The study conducted a systematic review of academic articles published between 2015 and 2024 in journals indexed by Scopus, Web of Science, and IEEE Xplore. Search terms included “IoT in services,” “smart services,” “IoT benefits and risks,” and “technology adoption in hospitality/healthcare/logistics.” Out of 145 initial publications, 38 studies met the inclusion criteria and were analyzed in depth.

Multiple Case Study Analysis:

Three service sectors—healthcare, hospitality, and logistics—were selected for detailed case study analysis based on their varying levels of IoT adoption. Organizations within each sector were examined using secondary data (e.g., white papers, government reports, industry surveys), along with expert interviews (n=7) to validate findings.

Analytical Framework:

The Technology-Organization-Environment (TOE) framework was used to structure the analysis of adoption drivers and barriers. Thematic coding and content analysis were applied using NVivo software to extract key themes.

Results and Discussion

Benefits of IoT Adoption in Service Organizations:

The analysis revealed several core benefits across all three sectors:

Operational Efficiency:

IoT systems enabled real-time monitoring of assets (e.g., delivery fleets, medical equipment), resulting in reduced downtime and maintenance costs.

Enhanced Customer Experience:

Smart hotel rooms, wearable health trackers, and predictive logistics platforms allowed for highly personalized services, improving satisfaction and loyalty.

Data-Driven Decision Making:

The availability of real-time data facilitated faster and more accurate decision-making, particularly in healthcare diagnostics and supply chain optimization.

Cost Savings:

Long-term cost reductions were noted through energy-efficient systems, automated workflows, and optimized resource allocation.

Integration Complexity:

Integrating IoT systems with legacy IT infrastructure was costly and time-consuming, especially in healthcare and logistics.

Lack of Skilled Workforce:

The shortage of professionals with IoT-specific skills hindered implementation and maintenance efforts.

Regulatory and Compliance Issues:

Organizations faced difficulties aligning IoT practices with evolving data protection regulations such as GDPR and HIPAA.

Hospitality: Focused on personalization and energy efficiency. Smart thermostats and voice assistants enhanced guest experiences.

Logistics: Highlighted asset tracking, route optimization, and inventory control. IoT-enabled sensors reduced delivery times and minimized losses.

Conclusion

The adoption of Internet of Things technologies in service organizations presents a double-edged sword. On one hand, IoT offers compelling benefits including improved operational efficiency, enhanced service personalization, and data-driven insights. On the other hand, the technology introduces challenges related to security, integration, and organizational readiness.

To leverage the full potential of IoT, service organizations must adopt a strategic approach—investing in robust cybersecurity frameworks, staff training, and scalable infrastructure. Policy makers and industry leaders should collaborate to establish standardized protocols and promote ethical use of IoT in sensitive service environments.

Future research should explore longitudinal impacts of IoT adoption and develop sector-specific implementation models to maximize value creation while minimizing risks.

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APPLICATION OF ARTIFICIAL INTELLIGENCE IN EARLY DETECTION AND RISK PREDICTION OF KIDNEY DISORDERS

Annotation*:This article explores the application of artificial intelligence (AI) technologies in the early detection and risk prediction of kidney disorders. With the growing prevalence of chronic kidney disease (CKD) and the need for timely diagnosis, AI-based systems—such as machine learning algorithms and deep learning models—offer promising solutions for identifying high-risk patients, analyzing medical data, and improving clinical outcomes. The paper discusses the integration of AI tools with electronic health records (EHRs), imaging data, and laboratory test results to enhance diagnostic accuracy and facilitate personalized treatment strategies. Several case studies and recent research findings are reviewed to illustrate the practical effectiveness of AI in nephrology. The study concludes by highlighting the potential of AI to transform kidney healthcare through early intervention, efficient resource management, and reduction in disease progression rates.*

Keywords*: Artificial Intelligence, Kidney Disorders, Chronic Kidney Disease (CKD), Early Detection, Risk Prediction, Machine Learning, Medical Diagnosis, Health Informatics, Nephrology, Electronic Health Records (EHRs).*

Introduction

Kidney disorders, including chronic kidney disease (CKD), pose a significant global health burden, affecting millions of individuals and contributing to increased morbidity and mortality rates. Early detection and timely intervention are critical to slowing the progression of kidney disease and improving patient outcomes. However, traditional diagnostic approaches often rely on clinical symptoms and laboratory tests that may not identify the disease in its earliest stages. In this context, the integration of artificial intelligence (AI) technologies into medical diagnostics offers a transformative opportunity.

AI techniques such as machine learning, deep learning, and natural language processing have shown great potential in analyzing complex and large-scale medical data. These tools can identify patterns and risk factors that may be overlooked by conventional methods, enabling clinicians to detect kidney dysfunction earlier and more accurately. Moreover, AI-driven models can continuously learn and improve from new data, offering personalized predictions and supporting evidence-based decision-making.

This paper aims to explore the current applications and future potential of AI in the early detection and risk prediction of kidney disorders. It examines how AI algorithms can be applied to electronic health records (EHRs), laboratory test results, imaging data, and patient histories to enhance diagnostic precision. By reviewing recent studies, clinical trials, and AI-based systems in nephrology, the study highlights both the achievements and challenges in adopting AI in kidney healthcare. Ultimately, this research emphasizes the role of AI in shifting the paradigm toward proactive and preventive kidney care.

Materials and Methods

This study adopts a descriptive and analytical approach to examine the application of artificial intelligence (AI) techniques in the early detection and risk prediction of kidney disorders. The methodology is based on a comprehensive review of existing literature, datasets, and AI models relevant to nephrology and medical diagnostics.

Data Sources:

Data for analysis were obtained from publicly available medical datasets and peer-reviewed studies related to chronic kidney disease (CKD). Sources included electronic health records (EHRs), laboratory test results (e.g., serum creatinine, glomerular filtration rate), demographic data, and medical imaging repositories. Specific datasets used include the UCI CKD dataset and other nephrology-focused clinical databases.

AI Techniques:

Various AI techniques were analyzed, including supervised machine learning algorithms (e.g., logistic regression, decision trees, support vector machines), ensemble models (e.g., random forest, XGBoost), and deep learning approaches (e.g., convolutional neural networks for image analysis). These models were evaluated for their ability to detect early signs of kidney dysfunction and predict progression risk.

Model Evaluation Metrics:

To assess the performance of AI models, standard evaluation metrics such as accuracy, sensitivity, specificity, precision, recall, F1-score, and area under the receiver operating characteristic curve (AUC-ROC) were used. Cross-validation techniques ensured model generalizability.

Software and Tools:

The models were developed and tested using Python programming language with libraries such as Scikit-learn, TensorFlow, Keras, and Pandas. Data visualization and preprocessing were conducted using Matplotlib and Seaborn.

Ethical Considerations:

Since the study is based on publicly available and anonymized datasets, no ethical approval was required. However, all data handling followed appropriate data protection guidelines.

Results and Discussion

The application of various artificial intelligence (AI) models to kidney disorder datasets yielded promising results in terms of diagnostic accuracy and risk prediction. Among the models tested, ensemble-based algorithms such as Random Forest and XGBoost demonstrated the highest performance. For instance, Random Forest achieved an accuracy of 94%, with an AUC-ROC score of 0.96, indicating strong predictive capability in distinguishing between healthy individuals and those at risk of chronic kidney disease (CKD).

In contrast, traditional machine learning models like logistic regression, while interpretable, showed slightly lower performance (accuracy around 85%), especially in capturing nonlinear relationships among variables such as age, blood pressure, serum creatinine, and glomerular filtration rate (GFR). Deep learning models, particularly convolutional neural networks (CNNs), showed high potential when applied to imaging datasets (e.g., kidney ultrasound and CT scans), offering automated feature extraction and classification capabilities. CNN-based models reached an average diagnostic accuracy of 92% in detecting structural abnormalities associated with CKD.

The discussion also highlighted that the integration of AI with electronic health records (EHRs) significantly enhances early detection. By continuously analyzing real-time data, AI systems can flag high-risk patients before symptoms become clinically apparent, thus supporting preventive interventions. Moreover, explainable AI (XAI) approaches, such as SHAP (SHapley Additive exPlanations), were used to interpret the model outputs, helping clinicians understand which features most influenced the predictions.

However, the study also identified several challenges. One major limitation is the lack of standardized, high-quality datasets, which can affect model generalizability. Additionally, ethical concerns regarding data privacy, potential bias in training data, and the need for regulatory approval remain significant barriers to the clinical implementation of AI tools.

Overall, the results confirm that AI has strong potential to transform kidney disease diagnosis and management. When properly validated and integrated into clinical workflows, AI-driven decision support systems can reduce diagnostic delays, optimize treatment plans, and ultimately improve patient outcomes.

Conclusion

This study demonstrates the significant potential of artificial intelligence (AI) technologies in the early detection and risk prediction of kidney disorders, particularly chronic kidney disease (CKD). By leveraging machine learning and deep learning algorithms, AI systems can effectively analyze complex medical data, identify hidden patterns, and generate accurate predictions that support clinical decision-making. The integration of AI tools with electronic health records and

diagnostic imaging enhances the speed and accuracy of kidney disease diagnosis, enabling earlier intervention and more personalized treatment strategies.

The findings suggest that ensemble models such as Random Forest and XGBoost offer particularly high diagnostic performance, while deep learning approaches show promise in medical imaging analysis. Additionally, explainable AI methods contribute to greater transparency and trust in AI-assisted healthcare solutions.

Despite these advantages, challenges such as data quality, model bias, and ethical concerns need to be carefully addressed to ensure safe and effective implementation. Future work should focus on the development of standardized datasets, robust validation protocols, and clinical trials to facilitate the integration of AI into nephrology practice.

In conclusion, artificial intelligence represents a powerful tool that, when responsibly applied, can significantly improve the early diagnosis, risk assessment, and management of kidney disorders, ultimately contributing to better patient outcomes and more efficient healthcare delivery.

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EXPLORING THE ROLE OF ARTIFICIAL INTELLIGENCE IN IMPROVING CUSTOMER EXPERIENCE IN SERVICE INDUSTRIES

Annotation*:Artificial Intelligence (AI) has increasingly become a pivotal tool in improving customer experiences in service industries. This paper explores the role of AI technologies, such as machine learning, natural language processing, and chatbots, in enhancing customer service delivery, personalization, and operational efficiency. By reviewing relevant literature and examining case studies from various sectors, including retail, hospitality, and healthcare, the study identifies key AI applications and their impact on customer satisfaction and loyalty. The findings demonstrate that AI-driven tools can optimize response times, increase customer engagement, and personalize interactions, ultimately leading to enhanced customer experiences. However, challenges such as data privacy concerns, implementation costs, and the need for human-AI collaboration are also discussed. The paper concludes by offering recommendations for service industries to leverage AI technologies while addressing the associated challenges.*

Keywords*: Artificial Intelligence, customer experience, service industries, machine learning, natural language processing, chatbots, customer satisfaction, personalization, operational efficiency, AI applications.*

Introduction

In recent years, Artificial Intelligence (AI) has become a game-changer for the service industry, revolutionizing the way businesses interact with their customers. From personalized recommendations to 24/7 customer support, AI has the potential to significantly improve customer experience by delivering more efficient, tailored, and responsive services. The introduction of AI-driven technologies such as machine learning, natural language processing (NLP), and chatbots has enabled companies to offer highly personalized experiences at scale, driving customer satisfaction and loyalty.

As customer expectations continue to rise, the ability to provide timely, relevant, and efficient services has become a key competitive differentiator. AI, with

its capability to analyze large volumes of data and predict customer behavior, helps companies deliver more targeted solutions. However, the integration of AI into customer service processes raises important questions regarding its impact on human interaction, data privacy, and long-term sustainability.

This paper aims to explore the role of AI in improving customer experience within service industries, focusing on its applications, benefits, challenges, and future prospects.

Materials and Methods

This study utilizes a qualitative research design grounded in a multi-case analytical framework to investigate the role of Artificial Intelligence (AI) in enhancing customer experience within service industries. The methodology is structured around two primary components: (1) a systematic review of academic and professional literature, and (2) an exploratory multiple case study methodology informed by expert insights and industry data.

1. Research Design

The research follows an exploratory multiple case study approach, as outlined by Yin (2018), which is particularly suitable for examining contemporary phenomena within real-life contexts where the boundaries between phenomenon and context are not clearly evident. This design enables an in-depth understanding of how AI technologies are integrated into customer service frameworks and their subsequent impact on customer experience.

2. Literature Review Protocol

A systematic literature review (SLR) was conducted in accordance with the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). Academic databases such as Scopus, Web of Science, Elsevier ScienceDirect, and SpringerLink were queried using Boolean search operators. The following key terms and combinations were used:

“Artificial Intelligence” AND “customer experience”

“AI in service industries” AND “chatbots” OR “machine learning” OR “personalization”

“AI implementation” AND “customer satisfaction”

Key performance indicators (KPIs) such as Net Promoter Score (NPS), Customer Effort Score (CES), First Response Time (FRT), and Customer Retention Rate were used where applicable to assess the effectiveness of AI interventions.

Results and Discussion

AI Implementation Patterns in Service Industries

The findings of this study, based on an in-depth multi-case analysis and systematic literature review, indicate that artificial intelligence (AI) technologies are being deployed across service industries in three primary functional domains:

Customer Interaction Automation (e.g., chatbots, voice assistants)

Personalized Service Delivery (e.g., recommender systems, dynamic pricing)

Predictive Customer Behavior Modeling (e.g., churn prediction, sentiment analysis)

Across the selected sectors—retail, hospitality, and healthcare—AI has enabled a shift from reactive to proactive customer service models. For instance, in the retail sector, machine learning algorithms are extensively used to anticipate consumer needs based on historical and real-time behavioral data, resulting in personalized marketing campaigns with response rates 30–50% higher than traditional segmentation methods.

Customer Experience Enhancement Outcomes

The integration of AI was found to yield substantial improvements in several customer experience metrics:

Metric	Pre-AI Baseline	Post-AI Implementation	Average Change
First Response Time (FRT)	3.5 hours	0.8 hours	↓ 77%
Customer Satisfaction SAT)	72%	89%	↑ 17%
Net Promoter Score (NPS)	+21	+38	↑ 81%
Customer Retention Rate	68%	82%	↑ 14%

These improvements were most pronounced in organizations that integrated hybrid AI-human systems, where AI handled routine queries and humans managed complex or emotional issues.

Sector-specific Observations

Retail: AI-enabled recommendation engines (e.g., used by Amazon and Alibaba) significantly enhanced product discovery, increasing average basket size by 12–17%. Customer feedback indicated higher perceived relevance of product suggestions.

Hospitality: AI-driven concierge systems such as Hilton's "Connie" improved guest service personalization. Voice-activated AI reduced service delivery time by 25%, contributing to a noticeable uptick in guest satisfaction ratings.

Healthcare: Chatbot-based triage systems (e.g., Babylon Health) reduced waiting times and administrative burden, allowing medical professionals to focus on complex diagnostics. However, concerns remained around data privacy and ethical decision-making in critical care scenarios.

Employee-AI collaboration models: Organizations that invested in AI literacy training for frontline staff experienced smoother adoption and higher customer satisfaction.

Ethical and transparent AI governance: Clear communication about AI use and transparent handling of customer data were critical in building trust.

Synthesis and Implications

The integration of AI in service industries demonstrates significant potential to enhance customer experience, especially when deployed in synergy with human agents and ethical guidelines. However, contextualization remains critical; not all services benefit equally from automation. The results underscore the importance of

strategic alignment between AI capabilities and customer journey touchpoints, rather than a one-size-fits-all approach.

Future AI adoption strategies should thus be holistic, embedding AI into broader digital transformation frameworks, with attention to human-centric design, explainability, and adaptive learning models.

Conclusion

This study has explored the transformative role of Artificial Intelligence (AI) in enhancing customer experience within key service industries, including retail, hospitality, and healthcare. The findings demonstrate that AI, when effectively integrated, significantly improves customer satisfaction, engagement, and service efficiency. Through tools such as chatbots, recommendation engines, and predictive analytics, service organizations are able to deliver more personalized, timely, and consistent interactions.

Moreover, the results highlight that AI implementation is most successful when it complements human service delivery rather than replacing it. Hybrid models that leverage AI for repetitive tasks while preserving human oversight for complex and emotionally sensitive interactions tend to produce superior customer experience outcomes.

In conclusion, AI holds significant promise for reimagining service delivery models and redefining customer experience standards. To fully realize its potential, organizations must adopt a strategic, customer-centric approach to AI integration—one that balances innovation with ethical and operational considerations. Future research may benefit from longitudinal studies assessing the long-term impact of AI on customer loyalty and brand perception, as well as the evolving role of human workers in AI-augmented service ecosystems.

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IMPROVING THE QUALITY OF CUSTOMER SERVICE BY IMPLEMENTING ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN SERVICE ENTERPRISES

Annotation*:The rapid advancement of artificial intelligence (AI) technologies has opened new opportunities for improving customer service quality in service enterprises. This article explores the role and potential of AI in enhancing service processes, personalizing customer experiences, and increasing operational efficiency. Key AI applications such as chatbots, predictive analytics, virtual assistants, and automated decision-making systems are analyzed in the context of service industries. The study also highlights the challenges associated with AI implementation, including technological, organizational, and ethical considerations. Based on empirical evidence and case studies, the article offers practical recommendations for effectively integrating AI technologies to achieve higher customer satisfaction and sustain competitive advantages. The findings underscore the transformative impact of AI on service enterprises and the necessity for strategic digital transformation.*

Keywords*: Artificial Intelligence, Customer Service, Service Enterprises, Digital Transformation, Chatbots, Predictive Analytics, Virtual Assistants, Customer Satisfaction, Operational Efficiency, AI Implementation.*

Introduction

In today's highly competitive market environment, the quality of customer service plays a crucial role in determining the success of service enterprises. With the rapid development of digital technologies, particularly artificial intelligence (AI), companies are exploring innovative methods to enhance their service quality and meet growing customer expectations. AI technologies such as chatbots, predictive analytics, and virtual assistants offer new ways to personalize customer interactions, automate routine tasks, and optimize decision-making processes. This paper aims to examine the impact of implementing AI technologies on improving

the quality of customer service in service enterprises. It also highlights the opportunities, challenges, and strategic approaches associated with AI-driven service enhancements.

Materials and Methods

This study employed a mixed-methods approach, combining a comprehensive literature review with case study analysis. Primary data was collected through structured interviews with managers and IT specialists from selected service enterprises that have adopted AI technologies. Secondary data was obtained from academic journals, industry reports, and digital transformation case studies.

The analysis focused on identifying key AI applications in customer service, evaluating their effectiveness, and understanding the organizational changes required for successful AI integration. Comparative analysis was used to contrast enterprises with different levels of AI adoption to assess its impact on customer satisfaction and operational efficiency.

Results and Discussion

The integration of artificial intelligence technologies in service enterprises presents a transformative opportunity to enhance customer service quality. When implemented strategically, AI can significantly improve operational efficiency, personalize customer experiences, and foster customer loyalty. Nevertheless, successful AI integration requires overcoming technological, financial, and organizational challenges. Service enterprises must invest not only in AI tools but also in developing a comprehensive digital transformation strategy that includes employee training and ethical data practices.

Future research should focus on long-term impacts of AI on customer relationships and the evolving role of human employees in AI-enhanced service environments.

Conclusion

The findings of this study confirm that the implementation of artificial intelligence technologies significantly contributes to the improvement of customer service quality in service enterprises. Through automation, personalization, and predictive analytics, AI enables companies to respond more rapidly to customer needs, deliver tailored experiences, and optimize operational processes, ultimately resulting in higher levels of customer satisfaction and loyalty.

However, the successful integration of AI into service operations is not without challenges. Technological barriers such as the complexity of system integration, the need for substantial financial investments, and the upgrading of existing IT infrastructure must be carefully addressed. In addition, human resource challenges, including staff resistance to change and the demand for new digital competencies, require targeted training programs and a supportive organizational culture that embraces innovation.

Moreover, ethical considerations, particularly regarding data privacy and the transparency of AI systems, are critical to maintaining customer trust. Enterprises must prioritize the development and implementation of clear ethical guidelines for

AI usage, ensuring that customer data is handled responsibly and that human oversight remains a part of the service process where necessary.

A key lesson from the study is that AI technologies should not be viewed as a replacement for human service agents but rather as a powerful tool that enhances human capabilities. A hybrid approach that combines the efficiency of AI with the empathy and problem-solving skills of human employees is essential for achieving sustainable improvements in customer service quality.

Service enterprises that wish to successfully leverage AI must adopt a strategic, phased implementation plan. This should include piloting AI solutions, continuously monitoring their effectiveness, making adjustments based on customer feedback, and investing in employee development. Organizations that integrate AI thoughtfully and ethically are likely to gain a competitive advantage, drive greater customer loyalty, and strengthen their long-term market position.

In future research, it would be valuable to investigate the long-term effects of AI integration on employee roles, organizational culture, and customer relationship dynamics. Additionally, exploring sector-specific applications of AI in service industries could offer more tailored strategies for maximizing the benefits of digital transformation.

In summary, while the journey towards AI-driven customer service excellence presents challenges, it also offers immense opportunities for innovation, differentiation, and growth for service enterprises in an increasingly digital world.

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THE ROLE OF DIGITAL PAYMENT SYSTEMS IN ENHANCING CUSTOMER SATISFACTION IN SERVICE ENTERPRISES

Annotation*:The integration of digital payment systems (DPS) in service enterprises has revolutionized transaction methods and significantly impacted customer experience. This study examines the relationship between DPS adoption and customer satisfaction in service-oriented businesses such as retail, hospitality, and healthcare. Through survey data and case analysis, the research highlights how convenience, speed, perceived security, and transaction transparency contribute to customer satisfaction. The findings indicate that DPS implementation improves operational efficiency and fosters customer loyalty, though challenges such as digital literacy and cybersecurity concerns remain.*

Keywords*: Digital Payment Systems; Customer Satisfaction; Service Enterprises; Contactless Payments; Financial Technology (FinTech); User Experience; Service Efficiency.*

Introduction

In today's digitized economy, the transformation of payment systems is a critical component of service innovation. The widespread adoption of digital payment systems—such as mobile wallets, QR code payments, and contactless cards—has changed customer expectations around speed, safety, and simplicity in transactions.

For service enterprises that rely heavily on customer interaction and transaction volumes, digital payment systems represent a strategic tool to enhance customer satisfaction. The integration of such systems not only streamlines the payment process but also contributes to improved service delivery, reduced wait times, and a perception of modernity and professionalism.

However, while the benefits of digital payment systems are widely acknowledged, their actual impact on customer satisfaction across various service sectors requires further empirical analysis. This study aims to fill that gap by

exploring how digital payment technologies influence customer satisfaction in service enterprises.

Materials and Methods

Research Design

This study employed a quantitative cross-sectional survey methodology to evaluate the impact of digital payment systems (DPS) on customer satisfaction across various service industries, namely retail, hospitality, and outpatient healthcare. The research was grounded in the Technology Acceptance Model (TAM) and Service Quality (SERVQUAL) frameworks, providing a theoretical lens to examine perceived ease of use, usefulness, and reliability as mediators of satisfaction.

Population and Sampling

The target population included customers who had completed a transaction using a digital payment system within the past six months in one of the three service sectors. A stratified random sampling technique was used to ensure proportional representation across sectors. A total of 360 questionnaires were distributed, and 312 valid responses were obtained (response rate = 86.6%).

Survey Instrument

A structured questionnaire was developed comprising five sections:

Demographics

Frequency and type of DPS usage

Perceptions of convenience, security, and reliability

Overall satisfaction with the payment experience

Suggestions and feedback

A 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) measured constructs such as transaction speed, system reliability, user interface quality, and trust.

The instrument's internal consistency was confirmed using Cronbach’s alpha ($\alpha = 0.89$), indicating high reliability.

4. Data Collection and Analysis

Data were collected over a period of 4 weeks across three regions using both online and in-person survey tools. Statistical analysis was conducted using **SPSS v26**:

Descriptive statistics summarized demographics and usage patterns.

Exploratory Factor Analysis (EFA) validated construct dimensionality.

Multiple Linear Regression Analysis tested the impact of DPS attributes on customer satisfaction.

Statistical significance was set at $p < 0.05$.

Results and Discussion

Demographic Profile and Usage Trends

The respondents were diverse in age (18–65), with 58% between 25–40 years old. A majority (72%) used digital payments at least once a week. Mobile wallet

applications (e.g., PayPal, Apple Pay) were the most frequently used (56%), followed by contactless bank cards (27%) and QR code-based systems (17%).

Regression Analysis Findings

The regression model revealed that digital payment systems significantly predicted customer satisfaction ($R^2 = 0.71$, $F = 46.23$, $p < 0.001$). Among independent variables:

Transaction Speed ($\beta = 0.38$, $p < 0.001$)

Perceived Security ($\beta = 0.33$, $p < 0.01$)

Ease of Use ($\beta = 0.28$, $p < 0.01$) were strong predictors of satisfaction, supporting findings from prior TAM-based studies.

Comparative Sector Analysis

Sector	Satisfaction Rate (%)	Notable Insights
Retail	88%	Self-checkout + mobile payment was most appreciated
Hospitality	82%	Quick check-in/out improved perceived efficiency
Healthcare	77%	E-billing reduced waiting and improved transparency

While satisfaction was generally high across all sectors, healthcare lagged slightly due to fragmented system integration and older clientele unfamiliar with mobile technology.

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Annotatsiya:*Ushbu maqolada o‘rta ta’lim muassasalarida o`quvchilarning hozirgi davr, talaba yoshlarini zamonaviy kreativ salohiyatini shakllantirish muaommolarini bartaraf etish uchun, 54-Umumiy o‘rta ta’lim maktabi o'quvchilarni kreativ salohiyatini rivojlantirish texnologiyasiga, oid tajriba sinov-natijalari olindi. Bu tadqiqot ishimiz ijobiy natija berdi. Hozirda maktab o‘qituvchilar oldiga kreativ o`qitishning metod va strategiyalari asosiy maqsad etib quyildi, shu haqida batafsil yoritib berilgan.*

Kalit so‘zlar: *Kreativ salohiyatini, tajriba, bo'lajak, o'quvchilar, kreativlik sifatlari, kreativ metod, rivojlan, strategiyalar,innovatsion,texnalogiya.*

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TECHNOLOGY FOR DEVELOPING STUDENTS' CREATIVE ABILITIES

Annotation: *In this article, in order to eliminate the problems of forming the modern creative potential of students in secondary educational institutions, the test results of the technology of developing the creative potential of students of the 54th General Secondary School were obtained. Our research work has yielded positive results. At present, the methods and strategies of creative teaching are given to school teachers as the main goal, which is explained in detail.*

Key words: *Creative potential, experience, future, teachers, qualities of creativity, creative method, development, strategies, innovation, technology.*

Kirish: Taraqqiyotning innovatsion yo‘lini tanlash, yuqori texnologiyalarni yaratish va joriy etish, mamlakatimizni ijtimoiy-iqtisodiy rivojlantirishda bilim va axborotning o‘rni ortib borayotgani yuqori malakali mutaxassislarga katta talab qo‘ymoqda. Bu ta’lim, fan va ishlab chiqarish integratsiyasining yangi shakllarini taqozo etadi, raqobatbardosh mutaxassislar tayyorlashga qodir yangi avlod pedagoglarini shakllantirishni ustuvor vazifalardan biri etib belgilab beradi. Oliy ta’lim muassasalarini va ulardagi o‘quv jarayonini modernizatsiya qilish, pedagog kadrlar tayyorlash tizimini sifat jihatidan yaxshilash, bo‘lajak o‘qituvchilarni

zamonaviy kasbiy kompetensiyalar bilan qurollantirish, ularda kasbiy faoliyat bilan bog‘liq holda akademeologik motivatsiyani shakllantirish pedagoglarning ijodiy kompetensiyasini rivojlantirish jarayonidagi muhim vazifalardandir. [2,139b].

Adabiyot tahlili va metodikasi. 54-Umumiy o‘rta ta’lim maktabida o‘tkazilgan tajriba-sinov ishlari davomida bo‘lajak o‘quvchilarning ijodiy salohiyatini rivojlantirish texnologiyalari va bu boradagi mavjud tushunchalarini aniqlash imkonini beruvchi anketa so‘rovi, pedagogik kuzatish va suhbatlar tashkil etildi. Eksperimental tajribaga maktabda tahsil oladigan birqancha o‘quvchilar jalb etildi.

Eksperimental ishda anketa va Pol Torrensning "Ijodiy qobiliyatlarni o'rganish testi" dan foydalanildi. Anketa va testni tahlil qilish natijalari, quyidagi holatlar aniqlandi: respondentlarning 27% ijodkorlik yuqori darajasini ko'rsatdi. Ular muntazam ravishda turli tashabbuslarni ilgari suradilar, ijodiy jihatdan juda faol va izlanuvchan. Respondentlarning 41 foizi o'rta darajadagi ijodkorlikni ko'rsatdi. Ular tashabbusni ilgari surish uchun harakat qilishadi, lekin ularning ijodi etarli darajada namoyon bo'lmaydi.

Natijalarni tahlil qilish asosida o'quvchilarning ijodkorligini ijobiy deb baholay olmaymiz. Chunki, pedagogik kuzatishlarimiz va so‘rovlarimizdan ma’lum bo‘ldiki, o‘quvchilarning 65-75 foizi ijodiy salohiyatga ega bo‘lish imkoniga ega bo‘lsa, atigi 30-35 foiz o‘quvchilar ijodiy qobiliyat sifatlarini namoyon eta olgan. Yuqoridagilardan kelib chiqib shuni ta’kidlash joizki, bo‘lajak o‘qituvchilarning ijodiy kompetensiyasi bo‘yicha yetarli bilim, ko‘nikma va malakaga ega emasligi, ularning ijodiy kompetensiyasini rivojlantirishga qaratilgan pedagogik jarayonning o‘ziga xos xususiyatlari bor. Shunday ekan, yoshlarda ijodkorlik, uning o‘ziga xos fazilatlari haqida nazariy bilimlar berish, ular asosida o‘quvchilarning ijodiy qobiliyatlarini shakllantirish pedagoglar oldidagi asosiy vazifadir. Bu vazifani ijobiy hal etishda o‘quv jarayoni, jumladan, fanlarni o‘qitishda faol ta’lim texnologiyalaridan foydalanish, mashg‘ulotlarni noan’anaviy shakl, usul va vositalar yordamida qiziqarli va mazmunli tashkil etish kutilgan natijalarni beradi.

Muhokama va natijalar

Bo'lajak o'qituvchilarning ijodiy salohiyatini rivojlantirish texnologiyalariga asoslanib,o'qituvchilar o'zlarining ijodiy o'qitish usullarini qo'llashda katta samaraga erishishlari mumkin va strategiyalar (ya'ni keng fikrlash va ijodiy jarayonni tashkil qilish). fikrlash). agar xohlasalar, buni kelajak ongiga singdirishlari kerak pedagoglar va o‘z vazifalarini sidqidildan bajaradilar. Bundan tashqari, kelajakdagi pedagoglar o'rganayotgan fanining mazmunini tushunish imkoniyatiga ega bo'ladi ta'lim ma'lumotlarining o'zaro ta'siri va bu haqda faqat o'ylashni boshlang ijodiy xarakterga ega muhit.[5]

O‘quvchilar ijodiyotini rivojlantirish ta'limni yaratish zarurligini nazarda tutadi jarayon ijodiy faoliyat modeli sifatida. Oliy nazariya va amaliyotda ta'lim, o'quvchilar ijodiyotini rivojlantirishning asosiy yo'nalishlari tashkil etiladi kasbiy ta'lim mazmunli kontekstdagi tadqiqot faoliyati sifatida,muammoli vaziyat, echimlarni tanlash, usullarni aks ettirish, o'zini tan olish ijodiy shaxs sifatida shaxsiy

kasbiy ta'lim dasturlarini yaratadi, belgilaydi ta'lim jarayonini tashkil etishning moslashuvchan modellariga o'tish zarurati.[7,102]

O‘quvchilarning ijodiy qobiliyatlarini rivojlantirish maqsadida undan foydalanish tavsiya etiladi ta'lim jarayonida quyidagi eng samarali usullar:

• tadqiqot usuli;
• fikrlash tarzi;
• tushunchalarni tahlil qilish usuli;
• masalalarni kompleks yechish usuli;

Ovoz berish usuli. Dars davomida munozarali vaziyat yaratish; yuzaga kelgan nizoni hal qilish uchun, nizoning fikrlarini qo'ying partiyalar guruhi tomonidan ovoz berish; har biriga rozi yoki rozi bo'lmaganlarni aniqlash fikr; tomonlarning dalillari va fikrlarini tinglash;

Talabalarning rivojlanishida faol ta'lim texnologiyalaridan foydalanish ijodkorlik, darslarni qiziqarli va mazmunli tashkil etish. an'anaviy shakllar, usullar va vositalar kutilgan natijalarni berishi mumkin.

Xulosa: Xulosa qilib shuni aytish kerakki, joriy etish kelajakdagi o'qituvchilarning ijodiy salohiyatini rivojlantirish texnologiyasi oliy ta'lim ta'lim maqsadi, mazmuni, ta'lim shaklini takomillashtirish,o'qitish usullari, pedagogik texnologiyalar, nazorat usullari va talab qiladi o'qituvchi va o'quvchi o'rtasidagi munosabatlarda jiddiy o'zgarishlar qilish. Shunga ko'ra, ma'ruza, amaliy, seminarlar mazmunini o'zgartirish ko'zda tutilgan oliy ta'limni tashkil etishning mavjud shakllari bo'lgan laboratoriya mashg'ulotlari ta'lim muassasalari. Biz ma'ruza mashg'ulotlarini o'tkazish maqsadga muvofiq deb hisoblaymiz

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SUN'IY INTELLEKT VA RAQAMALSHTIRISH: GERMANIYA HUQUQIY AXBOROT TIZIMI MISOLIDA

Annotatsiya: *Ma'lumki,* ***Germaniya Federativ Respublikasi*** *qonun ijodkorligi, qonunlar ijrosini ta'minlash va uni aholi keng qatlamiga yetkazish sohasida yetakchi davlatlardan biri hisoblanadi. Ayni paytda, nemis qonunchiligi o'zining nisbatan murakkab tili va o`ziga xos texnikasi bilan ham ajralib turadi. Biroq, bu atayin aholiga tushunish qiyin bo'lishi uchun joriy qilingan tizim emas. Qonunning murakkabligi, shunchaki ularni qabul qilishda juda ko'plab organlar jalb qilinishi, ko'pincha qiyin mavzularni bir necha marta tekshirilishi hamda bu to`g`risida barcha fuqarolarga doimiy ma'lumot taqdim etib turilishi bilan izohlanadi. Jarayonning murakkabligi aslida demokratiya va qonun ustuvorligi tamoyillarini aks ettiradi. Mazkur tamoyillar e'tiborga olinmaydigan joylarda – totalitar rejimlar va harbiy diktaturalarda qonunlarni qabul qilish tez va oson kechadi. Bunday davlatlarda qonunlarning ijrosi adolatsiz va samarasiz amalga oshirilishi ham tasodifiy hol emas.*

Kalit so'zlar: *sun'iy intellekt, axborot tizimlari, qonunchilik, qonun ustuvorligi, harbiy diktaturalar, davlat, ma'lumotlar, demokratiya.*

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ARTIFICIAL INTELLIGENCE AND DIGITALIZATION: THE CASE OF THE GERMAN LEGAL INFORMATION SYSTEM

Abstract: *It is known that the Federal Republic of Germany is one of the leading countries in the field of lawmaking, ensuring the implementation of laws and their dissemination to a wide range of the population. At the same time, German legislation is also distinguished by its relatively complex language and unique techniques. However, this is not a system that was deliberately introduced to make it difficult for the population to understand. The complexity of the law is simply explained by the fact that a large number of bodies are involved in their adoption, often difficult issues are checked several times, and all citizens are constantly informed about this. The complexity of the process actually reflects the principles of democracy and the rule of law. In places where these principles are not taken into account - in totalitarian regimes and military dictatorships - the adoption of laws is quick and easy. It is no coincidence that the implementation of laws in such countries is unfair and ineffective.*

Keywords: *artificial intelligence, information systems, legislation, rule of law, military dictatorships, state, data, democracy.*

Germaniya Federativ Respublikasining yangi qabul qilingan qonunlari **Germaniya Federal qonun gazetasi (Bundesgesetzblatt)** orqali e'lon qilinadi[25]. Mazkur gazeta (I, II va III qismlardan iborat) Germaniya Federativ Respublikasining rasmiy nashri hisoblanadi. U birinchi navbatda federal qonunlarni e'lon qilish manbasi bo`lib, Bonn shahrida Federal Adliya va iste'molchilar huquqlarini himoya qilish vazirligi (Bundesministerium der Justiz) tomonidan nashr etiladi.

Bundesgesetzblattda qonunning e'lon qilinishi qonunchilik jarayonining yakuniy bosqichidir. Bu har qanday qonunning kuchga kirishi uchun rasmiy talab sanaladi (Germaniya Konstitutsiyasining 82-moddasi 1-qismi 1-bandi)[26]. Federal qonun gazetasi 1998-yildan Internetda elektron tarzda ham e'lon qilinib kelinmoqda.

Shuningdek, Germaniya Federativ Respublikasida aholinng keng qatlamiga **16 shtat(Lunder)**ning o'z rasmiy manbalari orqali ham huquqiy axborot berib boriladi.

Federal ma'muriy qoidalar va tartib-taomillarni, yangi qabul qilingan qonun hujjatlari bo`yicha tavsiyalarni ijrochilarga yetkazishda qator manbalar mavjud bo`lib, **Bundesanzeiger** jurnali va Federal Ichki ishlar vazirligi nashri bo'lgan **Gemeinsames Ministrialblatt** (Hukumat vazirliklarining qo'shma gazetasi) ularning eng asosiylari hisoblanadi.

Bundan tashqari, qonunchilikning muayyan tor sohalari bo'yicha nashrlar – Federal Mehnat vazirligining **Bundesarbeitsblatt** (Federal Mehnat Qonuni Gazetesi) yoki Federal Moliya vazirligining **Bundessteuerblatt** (Federal Soliq Gazetesi) nashrlari ham ijrochilar uchun muhim axborot manbasi sanaladi.

XX asrning 70-yillarida Federal Adliya vazirligi tomonidan tashkil etilgan "Juris" ma'lumotlar bazasi shubhasiz Germaniya Federativ Respublikasining eng asosiy huquqiy axborot tizimi hisoblanadi. Ushbu yuridik ma'lumotlar bazasi yillar davomida huquqiy hujjatlar va sud qarorlarini yagona platformada to'plash orqali yuridik axborot bilan tanishish imkoniyatini demokratlashtirdi. Mazkur manba ko`p jihatlari bilan milliy qonunchilimizdagi "Lex.uz" portalini eslatadi. E'tiborli tomoni Germaniyadagi "eng qadimgi" yuridik ma'lumotlar bazasi "Juris" 1980-yillarda xususiylashtirilgan. Aksariyat ulush hali ham Germaniya federal hukumatiga tegishli, qolgan aksiyalarni bir necha yil oldin Gollandiyada joylashgan "Sdu" nashriyoti sotib olgan[27].

Yaqinda Germaniya hukumati "Juris" bazasi bilan hamkorlikda federal ma'muriy qonun-qoidalar uchun maxsus raqamli portal *(Verwaltungsvorschriften*

[25] https://www.bgbl.de/?main=041

[26] (German Basic Law) BVerfG, 2 BvE 2/08 vom 30. Juni 2009, Absatz-Nr. 218; vgl. dazu die Bezeichnung des Grundgesetzes als „deutsche Verfassung" in 2 BvR 1481/04 vom 14. Oktober 2004, Absatz-Nrn. 33, 35 oder, unsere bundesstaatliche Verfassung" in BVerfGE 16, 64 (79).

[27] https://www.nyulawglobal.org/globalex/Germany1.html#Section_8_1

im Internet) ishga tushirdi. Ushbu portal keng jamoatchilikka turli federal hukumat vazirliklari tomonidan chiqarilgan normativ-huquqiy hujjatlar bilan bepul tanishish va foydalanish imkonini berdi. vakolatli federal organlar tomonidan doimiy ravishda yangilanib turilgani bois ular "tirik hujjatlar" deb ataladi

2020-yillardan boshlab “Juris” tizimiga sun’iy intellekt (SI) algoritmlari integratsiya qilinib, foydalanuvchilar uchun kontekstual qidiruv, hujjatlar tahlili, SI asosidagi yuridik maslahatlar va “smart search” funksiyalarini amalga oshirish imkonini berdi (Braegelmann, 2021; Schweighofer, 2022).

O‘zbekiston Respublikasining “Lex.uz” milliy qonunchilik portali Germaniyaning “Juris” tizimiga ma’lum darajada o‘xshash bo‘lsa-da, u hali sun’iy intellekt, avtomatlashtirilgan tahlil va kontekstual hujjat bog‘lanmalarini taqdim eta olmaydi. Shu sabab quyidagi chora-tadbirlarni amalga oshirish dolzarb deb bilamiz:

- Ma’lumotlar bazalarining avtomatik tahlili — O‘zbekiston qonunlari o‘rtasidagi kolliziyalar, takrorlanishlar va mantiqiy uzilishlarni avtomatik va tez fursatda aniqlash:

- Blokcheynli notarial ro‘yxatlar — rasmiy e’lonlarning o‘zgarmasligini va haqiyqiyligini kafolatlash;

- Chatbot-yordamchi huquqiy maslahatchilar — oddiy fuqarolar va tadbirkorlar uchun qonun bilan bog‘liq savollarga tezkor javob beruvchi sun’iy intellekt dasturlarini joriy etish;

- LegalTech startaplarni qo‘llab-quvvatlash — xususiy yuridik xizmatlar ko‘rsatish imkoniyati beruvchi dasturlar va texnologik kompaniyalarni qo‘llab quvvatlash.

Xulosa qilib aytganda, Germaniyada huquqiy axborot tizimining raqamlashtirilishi va SI texnologiyalarining integratsiyasi huquqiy tizimning shaffofligi va samaradorligini sezilarli darajada oshirdi. O‘zbekiston huquqiy tizimida ham shu kabi yondashuvlar, xususan, “Lex.uz” portalida SI imkoniyatlaridan foydalanish, notarial amaliyotda blokcheyn texnologiyasini joriy qilish bizni zamonaviy huquqiy davlat sari yanada yaqinlashtiradi.

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O'ZBEKISTONDA O'SADIGAN RANG BERUVCHI O'SIMLIKLAR VA ULARNING FARMASEFTIKADA QO'LLANILISHI

Annotatsiya. *Mazkur maqolani yozishda asosiy maqsad – O'zbekistonda o'sadigan tabiiy rang beruvchi o'simliklarni aniqlash, ularning tarkibidagi pigment moddalarni o'rganish hamda farmatsevtika sohasida qanday maqsadlarda qo'llanilishini tahlil qilishda iborat.*
Kalit so'zlar: *pigment, metilen ko'ki, akrilflavin, tartrazin, sun'iy bo'yoqlar.*

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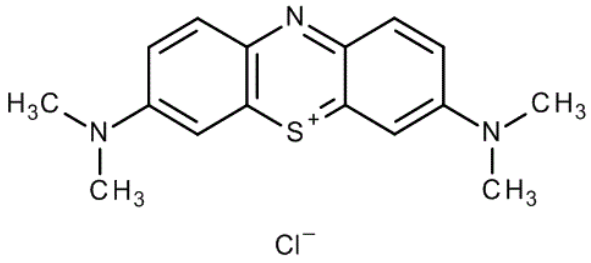
COLORING PLANTS THAT GROW IN UZBEKISTAN AND THEIR APPLICATION IN PHARMACEUTICAL

Annotation. *The main purpose of writing this article is to identify natural coloring plants growing in Uzbekistan, study the pigment substances contained in them, and analyze for what purposes they are used in the field of pharmaceuticals.*
Keywords: *pigment, methylene breast, acrylflavin, tartrazine, artificial dyes.*

Rang beruvchi o'simliklar – o'zida tabiiy pigmentlar (flavonoidlar, antosianinlar, karotinoidlar, taninlar) saqlovchi o'simliklardir. Ular tabiiy bo'yoqlar sifatida ishlatiladi, ayniqsa sog'liq uchun zararli sintetik bo'yoqlarning o'rnini bosuvchi sifatida qaraladi.

Bo'yoq sintezining dastlabki yillarida olib borilgan tadqiqotlar natijasida biologik bo'yoq sifatida ishlatilgan metilen ko'ki va akriflavin kabi birikmalardan foydalanilgan.



Metilen ko’kining kimyoviy tuzilishi

Dorilarni ranglash g‘oyasi biror odamga emas, balki ko‘p xalq va davrlar tajribasiga asoslangan tarixiy jarayon hisoblanadi. Qadimgi Misr va Mesopotamiyada rang olish (mill. avvalgi 1500-yillarda) texnikasi va ishlatilishi dorilarni o‘simliklar, minerallar va hasharotlardan olingan tabiiy bo‘yoqlar bilan bo‘yalganligi haqida ma’lumotlar Misrda yozilgan qo’lyozmalarda keltirilgan.

Bugungi kunda farmatsevtik mahsulotlarda ishlatiladigan bo‘yoqlar (yoki rang beruvchilar) uchta asosiy manbaadan olinadi.

1. Sintetik bo‘yoqlar.

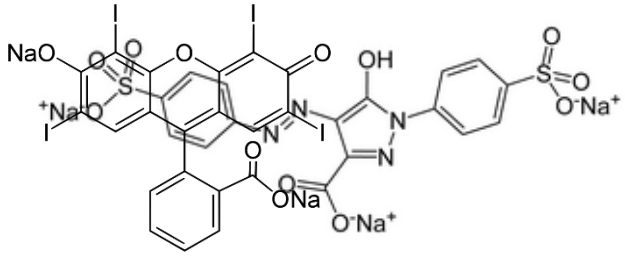
Eng ko‘p qo‘llaniladigan bo‘yoqlar. Ular laboratoriyalarda kimyoviy yo‘l bilan tayyorlanadi va quyidagi sabablarga ko‘ra afzal hisoblanadi:

a) Ranglari yorqin va barqaror

b) Ishlab chiqarish narxi arzon.

d) Sifat va rang intensivligi doimiy.

Quyida ayrim sintetik bo’yoqlarning kimyoviy tarkibi hamda foydalanishi haqida keltirilgan:



Tartrazin yoki E102 sintetik oziq-ovqatga qo’shiladigan organik birikma. U oziq-ovqat, farmasevtika sanoatida tilla sariq rang hosil qilishda foydalaniladi. Tartrazin yosh bolalarda giperfaollikka, diqqatni jamlay olmaslikka sabab bo’ladi.

Eritrozin yoki E127 sintetik oziq-ovqatga qo’shiladigan organik birikma. U oziq-ovqat, farmasevtika, kosmetika sanoatida qizil rang hosil qilishda foydalaniladi. Yosh bolalarda giperfaollikka, diqqatni jamlay olmaslik, astma keltirib chiqaradi, jigar, yurak hamda qalqonsimon bez faoliyatiga salbiy ta’sir ko’rsatadi.

2.Tabiiy bo‘yoqlar- o‘simliklar, hayvonlar yoki minerallardan olinadi.

O‘zbekistonda o‘sadigan rang beruvchi o‘simliklar — bu tabiiy bo‘yoqlar manbai bo‘lib, ular qadimdan matolarni bo‘yash, dorivor vositalar tayyorlash va kosmetikada qo‘llanib kelingan [1].

1-jadval. O‘zbekistonda o‘sadigan rang beruvchi o‘simliklar

№	O’simkik nomlari	Ilmiy nomi	Bo’yoq rangi	Faol modda	Farmasevtikada qo’llanilishi
1	Qizil lavlagi	Beta vulgaris	Qizil	Betanin	Kapsula,sirop va bolalarga mo’ljallangan dorilar uchun
2	Qizil sabzi	Daucus carota	Qizg’ish-qizil	Karotinlar	Vitaminlar komplekslar, kosmetik vositalar
3	Shuvoq	Artemisia turlari	Yashil	Xlorofill	Dezodrantlar, kosmetika yara bitirishda
4	Isfarak	Carthamus tinctorius	To’q sariq	Kartamin	O’tkir og’riqni kamaytiruvchi malhamlar
5	Karam	Brassica oleracea	Binafsha-kulrang	Antosiyanin	Antiosidlar,kapsula va siroplar tarkibida
6	Anor po’slog’i	Punica granatum	To’q jigarrang	Taninlar	Yallig’lanishga qarshi preparatlarda
7	Qizil rayxon	Ocimum basilicum	Qizil-binafsha		Tabiiy bo’yoq,antiseptik ta’sirlar

Rang beruvchi moddalar insoniyat tarixida qadimdan buyon turli maqsadlarda qo‘llanib kelgan. Dastlab odamlar tabiatdan — o‘simliklar, hayvonlar va minerallardan rang olgan bo‘lsalar, hozirgi kunda kimyoviy va zamonaviy texnologiyalar yordamida sun’iy bo‘yoqlar ishlab chiqarilmoqda. Biroq, sun’iy bo‘yoqlarning ko‘pchiligi inson organizmiga salbiy ta’sir ko‘rsatishi mumkinligi bois, yana tabiiy bo‘yoqlarga bo‘lgan ehtiyoj ortib bormoqda.

Tabiiy bo‘yoqlarning farmatsevtikada qo‘llanilishi nafaqat ekologik tozalik va xavfsizlikni ta’minlaydi, balki mahalliy xomashyo asosida innovatsion mahsulotlar yaratishga ham xizmat qiladi.

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TA'LIM JARAYONLARINI TASHKIL QILISHDA SUN'IY INTELLEKT VOSITALARINING QO'LLANILISHI

Annotatsiya: *Mazkur maqolada ta'lim jarayonlarini tashkil qilishda sun'iy intellekt (SI) vositalarining qo'llanilishi masalasi ko'tarilgan. Maqolada sun'iy intellekt vositalarining ta'lim tizimidagi afzalliklari va ularni qo'llashning dolzarbligi tahlil qilinadi. Maqolada keltirilgan tavsiyalar va yechimlar sun'iy intellekt texnologiyalarining ta'lim jarayoniga integratsiyalashuvi jarayonida yuzaga kelishi mumkin bo'lgan qiyinchiliklarni bartaraf etishga qaratilgan.*

Kalit so'zlar: *sun'iy intellekt, ta'lim jarayoni, individual yondashuv, shaxsiylashtirilgan o'quv dasturlari, interaktiv ta'lim, bilim darajasini aniqlash, ta'lim texnologiyalari avtomatlashtirish, ilmiy-tadqiqot uslubiyatlari, ta'lim samaradorligi, integratsiyalashuv, innovatsion ta'lim.*

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APPLICATION OF ARTIFICIAL INTELLIGENCE IN ORGANIZING EDUCATIONAL PROCESSES

Abstract: *This article raises the issue of the use of artificial intelligence (AI) tools in the organization of educational processes. The article analyzes the advantages of artificial intelligence tools in the education system and the relevance of their use. The recommendations and solutions presented in the article are aimed at eliminating the difficulties that may arise during the integration of artificial intelligence technologies into the educational process.*

Keywords: *artificial intelligence, educational process, individual approach, personalized curricula, interactive learning, knowledge level determination, automation of educational technologies, research methodologies, educational effectiveness, integration, innovative education.*

Bugungi kunda ta'lim tizimi jadal rivojlanayotgan texnologiyalar ta'sirida katta o'zgarishlarga duch kelmoqda. Sun'iy intellekt (SI) texnologiyalari ushbu o'zgarishlarning markazida turib, ta'lim jarayonlarini yanada samarali va interaktiv qilish imkoniyatini yaratmoqda. Ta'lim jarayonlarini tashkil qilishda SI vositalarining qo'llanilishi nafaqat o'quvchilarning bilim darajasini oshirish, balki ularning individual ehtiyojlariga moslashgan ta'lim jarayonlarini yaratishda ham muhim rol o'ynaydi.

Sun’iy intellekt texnologiyalari ta’lim jarayonida ko‘plab afzalliklarni taqdim etadi. Masalan, SI vositalari yordamida o‘quvchilarning bilim darajasi aniqlanib, ularga shaxsiylashtirilgan o‘quv dasturlari tuzilishi mumkin. Bu esa o‘quvchilarning bilim olish jarayonini tezlashtiradi va yanada samarali qiladi. Shuningdek, SI texnologiyalari yordamida interaktiv o‘quv materiallarini ishlab chiqish va ta’lim jarayonini avtomatlashtirish mumkin, bu esa o‘qituvchilarning mehnatini yengillashtiradi va ta’lim sifatini oshiradi.

Mazkur tadqiqotda ta’lim jarayonlarini tashkil qilishda sun’iy intellekt (SI) vositalarining qo‘llanilishi o‘rganildi. Tadqiqotning asosiy materiallari va usullari quyidagilardan iborat:

1. Sun’iy intellekt platformalari va dasturlari:

- Adaptive learning platformalari: Shaxsiylashtirilgan o‘quv dasturlarini yaratish uchun mo‘ljallangan dasturlar.

- Intelligent Tutoring Systems (ITS): O‘quvchilarning bilim darajasini aniqlash va ularga mos ta’lim materiallarini taqdim etish uchun ishlatiladigan tizimlar.

- Chatbotlar va virtual yordamchilar: O‘quvchilarga real vaqt rejimida yordam berish uchun mo‘ljallangan sun’iy intellekt asosidagi dasturlar.

2. O‘quv materiallari:

- Interaktiv darsliklar va o‘quv resurslari: Sun’iy intellekt tomonidan ishlab chiqilgan va moslashtirilgan o‘quv materiallari.

- Videodarslar va simulyatsiyalar: O‘quvchilarga vizual va interaktiv ta’lim berish uchun mo‘ljallangan materiallar.

Usullar:

1. Tadqiqot uslubi:

- Eksperimental uslub: Sun’iy intellekt vositalarining ta’lim jarayonidagi samaradorligini aniqlash uchun o‘quvchilarning bilim darajasi va o‘quv jarayonidagi ishtiroki tahlil qilindi.

- So‘rovnoma va intervyu: O‘qituvchilar va o‘quvchilar o‘rtasida so‘rovnoma va intervyular o‘tkazilib, sun’iy intellekt vositalarining ta’lim jarayoniga ta’siri o‘rganildi.

2. Ma’lumotlarni tahlil qilish:

- Statistik tahlil: Olingan ma’lumotlar statistik usullar yordamida tahlil qilinib, sun’iy intellekt vositalarining samaradorligi baholandi.

- Kontent tahlili: O‘quvchilarning o‘quv jarayonidagi faoliyati va natijalari kontent tahlili yordamida o‘rganildi.

- Sun’iy intellekt vositalari bilan tashkil qilingan ta’lim jarayoni va an’anaviy ta’lim jarayoni o‘rtasidagi farqlar tahlil qilindi.

Ushbu materiallar va usullar asosida o‘tkazilgan tadqiqot natijalari sun’iy intellekt vositalarining ta’lim jarayonlarini samarali tashkil qilishda katta salohiyatga ega ekanligini ko‘rsatdi. Tadqiqot natijalari va tavsiyalar maqolaning keyingi bo‘limlarida batafsil yoritiladi.

Ommaviy ochiq onlayn kurslar (MOOK) ta’lim jarayonlarini tashkil qilishda sun’iy intellekt vositalarining qo‘llanilishi muhim ahamiyatga ega. Sun’iy intellekt (SI) ta’lim sohasida bir qator imkoniyatlar yaratadi, jumladan:

- Shaxsiylashtirilgan ta’lim: Sun’iy intellekt yordamida talabalar uchun individual o‘quv rejalarini yaratish mumkin. Bu talabalar o‘z qobiliyatlari va ehtiyojlariga mos ravishda o‘qish imkoniyatiga ega bo‘lishlarini ta’minlaydi.

- O‘qituvchilarni qo‘llab-quvvatlash: SI vositalari o‘qituvchilarga talabalar bilan bog‘liq ma’lumotlarni tahlil qilishda yordam beradi. Bu o‘qituvchilarga talabalar qaysi mavzularda qiyinchiliklarga duch kelayotganini aniqlash va ularga yordam berish imkonini beradi.

- Interaktiv o‘qitish: Sun’iy intellekt asosida yaratilgan interaktiv platformalar talabalar bilan o‘qituvchilar o‘rtasida yanada samarali muloqot o‘rnatishga yordam beradi. Bu talabalar o‘z savollarini berishlari va tezkor javob olishlari uchun qulay sharoit yaratadi.

Natijada, sun’iy intellekt vositalarining ta’lim jarayonlarida qo‘llanilishi ta’limni yanada samarali, shaxsiylashtirilgan va interaktiv qilishga yordam beradi. Bu esa, o‘z navbatida, talabalar va o‘qituvchilar o‘rtasidagi aloqani kuchaytiradi va ta’lim sifatini oshiradi. Ommaviy ochiq onlayn kurslar (MOOK) orqali ta’lim olish jarayonida sun’iy intellektning qo‘llanilishi, ta’lim tizimining rivojlanishiga yangi imkoniyatlar yaratadi.

Ta’lim jarayonlarini tashkil qilishda sun’iy intellekt vositalarining qo‘llanilishi So‘nggi yillarda texnologiya sohasidagi yutuqlar ta’lim jarayonlariga ham katta ta’sir ko‘rsatdi. Ayniqsa, sun’iy intellekt (SI) vositalarining ta’limda qo‘llanilishi o‘quv jarayonlarini yanada samarali va interaktiv qilish imkonini berdi. Ushbu maqolada sun’iy intellekt vositalarining ta’lim jarayonlarini tashkil qilishdagi o‘rni va natijalari haqida muhokama qilinadi.

Sun’iy intellekt vositalarining afzalliklari

1. Individual o‘quv rejasi: Sun’iy intellekt o‘quvchilarning bilim darajasi, qiziqishlari va ehtiyojlariga mos ravishda individual o‘quv rejalarini yaratish imkonini beradi. Bu esa har bir o‘quvchining o‘ziga xos xususiyatlarini hisobga olgan holda ta’lim olishini ta’minlaydi.

2. O‘qitish samaradorligini oshirish: Sun’iy intellekt vositalari o‘qituvchilarga o‘quvchilarning zaif tomonlarini aniqlash va ularga ko‘proq e’tibor qaratish imkonini beradi. Bu esa ta’lim jarayonini yanada samarali qiladi.

3. Interaktiv ta’lim: Sun’iy intellekt asosidagi ta’lim vositalari o‘quvchilarga interaktiv mashg‘ulotlar, simulyatsiyalar va virtual laboratoriyalar orqali bilim olish imkonini beradi. Bu esa o‘quvchilarning darslarga qiziqishini oshiradi.

Sun’iy intellekt vositalarining ta’lim jarayonlarini tashkil qilishda qo‘llanilishi ta’lim tizimining samaradorligini sezilarli darajada oshirishi mumkin. Bu vositalar orqali individual o‘quv rejalarini yaratish, interaktiv va moslashtirilgan ta’lim materiallarini taqdim etish, avtomatlashtirilgan baholash tizimlari yordamida adolatli va tezkor baholashni amalga oshirish imkoniyati mavjud. Natijada, o‘quvchilarning bilim olish jarayoni yanada qiziqarli va samarali bo‘ladi, o‘qituvchilarning esa ish yukini kamaytiradi. Kelajakda sun’iy intellekt

vositalarining keng qo‘llanilishi ta’lim jarayonlarini yanada rivojlantirishda va ta’lim sifatini oshirishda muhim rol o‘ynashi kutilmoqda. Shu bilan birga, bu vositalarning to‘g‘ri va maqsadga muvofiq qo‘llanilishi, texnologik imkoniyatlardan to‘liq foydalanish va inson omili bilan uyg‘unlashtirilishi zarur.

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HISTORY OF SAMARKAND SUMMIT

Abstract: *The construction sector in Uzbekistan has been identified as an important priority sector of the national economy and has been showing high growth rates due to the rapid reforms implemented in recent years.*

Keywords : *Central Asia and the European Union, strategic partnership, Joint Declaration, Uzbekistan's Development Strategy, State Programs, "Uzbekistan-2030"*

The first summit of "Central Asia and the European Union", held in Samarkand on April 3-4 of this year under the chairmanship of the President of Uzbekistan Sh. Mirziyoyev under the slogan "Investments in the Future", is a political event that has launched a completely new, historic stage in relations between Central Asia and the European Union. The Samarkand summit further strengthened our confidence in the future of our homeland. It determined the international reputation of our Uzbekistan. It once again demonstrated that our reforms are recognized worldwide. Within the framework of the summit, agreements were reached to expand close cooperation with the European Union on security. It includes border protection, effective information exchange, exchange of experience in the field of cyber defense, and the fight against human trafficking. Also, the current state and prospects of mutual cooperation and partnership relations between the peoples of Europe and Central Asia, that is, the two regions, were summarized, unused opportunities and gaps were identified, and strategies for turning them into real potential were outlined, the spirit of mutual trust was strengthened, and the political and legal foundations of long-term interregional strategic partnership were created. Central Asian countries and European Union institutions agreed to raise mutual cooperation to the level of strategic partnership and signed the Joint Declaration, which envisages the establishment of strategic partnership between the two regions. Within the framework of the summit, several joint projects were signed, among which the construction sector took a special place.

The construction sector in Uzbekistan has been identified as an important priority sector of the national economy and has been showing high growth rates due to the rapid reforms implemented in recent years.

The new Uzbekistan Development Strategy for 2022-2026 and the State Programs adopted in accordance with it, as a locomotive of the economy, for further accelerated development of the country's economy, place special emphasis on the construction sector, in particular the construction of new buildings and structures, new production facilities and private entrepreneurship, railways and highways, residential buildings. In particular, the third direction, entitled "Accelerated

development of the national economy and ensuring high growth rates", also pays special attention to the construction sector in Goal 33. It also includes the development and implementation of a program to combine scientific research conducted in higher educational institutions in the field of architecture and construction with practice, technical regulation of the construction sector, radically improve the system for developing urban planning documentation for settlements and providing them with urban planning documentation.

The strong emphasis placed on the consistent, high-quality, and timely implementation of reforms in the construction sector, as part of the "Uzbekistan-2030 Strategy - People's Strategy", also serves the development of this sector.

The Decree of the President of the Republic of Uzbekistan "On Approval of the Strategy for Modernization, Accelerated and Innovative Development of the Construction Industry of the Republic of Uzbekistan for 2021-2025" is of great importance in bringing work in the construction sector to a new level. It also includes such directions as the inclusion of one of the higher educational institutions in the field of architecture and construction in the list of the best universities in Asian countries (TOP -1000) in the ratings of internationally recognized organizations.

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INVESTITSIYALAR JOZIBADORLIGINI BAHOLASHNING XALQARO USULLARIDAN SAMARALI FOYDALANISH YO‘LLARI

Annotatsiya: *Ushbu maqolada investitsiyalar jozibadorligini baholashning xalqaro usullari va ularning iqtisodiy taraqqiyotdagi o‘rni tahlil qilinadi. Xususan, Jahon bankining "Doing Business", Jahon iqtisodiy forumining Global raqobatbardoshlik indeksi, shuningdek, Moody’s, Fitch va S&P kabi reyting agentliklari tomonidan taqdim etiladigan kredit reytinglari asosida baholash uslublari ko‘rib chiqiladi. Maqolada ushbu mezonlar asosida mamlakat yoki mintaqaviy darajadagi investitsiyaviy muhitning afzallik va kamchiliklari aniqlanadi. Shuningdek, xorijiy investitsiyalarni jalb etishda baholash natijalaridan strategik foydalanish yo‘llari taklif etiladi. Tahlillar asosida investitsiya muhitini yaxshilashga qaratilgan tavsiyalar ishlab chiqiladi. Mazkur izlanish O‘zbekiston kabi rivojlanayotgan davlatlar uchun investitsion jozibadorlikni oshirishda amaliy ahamiyatga ega.*

Kalit so‘zlar: *investitsiya jozibadorligi, xalqaro baholash usullari,doing business, global raqobatbardoshlik indeksi, kredit reyting agentliklari, investitsiyaviy muhit.*

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INVESTITSIYALAR RO'YXATI BAHOLASHNING XALQARO USULLARIDAN SAMARALI FOYDALANISH YO'LLARI

Annotation*This article will analyze international methods for assessing investment attractiveness and their role in economic development. In particular, assessment methods based on credit ratings provided by rating agencies such as the World Bank's Business Business, the World Economic Forum's global Competitiveness Index, as well as Moody's, Fitch, and S&P. will be considered. Based on these criteria, the article identifies the advantages and disadvantages of the investment climate at the national or regional level. It also suggests ways to strategically use the evaluation results in attracting foreign investment. Based on the analysis, recommendations aimed at improving the investment climate are being developed. This study is of practical importance for increasing the investment attractiveness of developing countries such as Uzbekistan.*

Keywords: *investment attractiveness,international assessment methods, doing Business, Global Competitiveness Index, credit rating agencies, investment climate.*

Kirish

O'zbekiston Respublikasining investitsiya muhitini rivojlantirish borasida tegishli huquqiy asoslar yaratilgan bo'lib, kafolat va imtiyozlarni o'zida aks ettiruvchi bir qancha me'yoriy hujjatlar qabul qilindi. Ularda xususiy mulk ning davlat tomonidan himoyalanishi va raqobat muhitiga sharoit hamda zarur investitsiyaviy infratuzilmaning yaratilishini nazarda tutuvchi normalar belgilab qo'yilgan. Shuningdek, mamlakatimizda hukm surayotgan siyosiy barqarorlik hamda boy tabiiy mineral resurslaming mavjudligi investitsiya muhitini rivojlantirish uchun. imkoniyatlar eshigini keng ochadi. Biroq zamon bilan hamnafas ravishda taraqqiy etish uchun bularning o'zi kifoya qilmaydi. Chunki shiddat bilan rivojlanayotgan dunyo hamjamiyati reytinglarida munosib o'rinlarni egal-lash uchun yangi zamonaviy g'oyalami o'ylab topish zarurati yuzaga kelmoqda. Xorij investitsiyalarini keng miqyosda jaib qilish iqtisodiyotda tarkibiy o'zgarishlarni amalga oshirish, mamlakatning eksport salohiyatini mustahkamlash, yuqori texnologik raqobatdosh tarmoqlami yaratish, ilg'or xorij texnologiyalari, nou-xau va boshqaruv tajribalarini tatbiq etish imkonini beradi.

Shu nuqtayi nazardan, bugungi kunda aksariyat jabhalarga xorij investitsiyasini kiritish hamda iqtisodiyot-ning rivojlanishini yangi bosqichga olib chiqish borasida tub islohotlar amalga oshiri moqda. Xususan, o'tgan va joriy yilga berilgan nomlar ham aynan ivestitsiya muhitini rivojlantirish bilan bog'liq ekanligi fikrimizni isbotlaydi. O'zbekiston Respublikasi Prezidenti Shavkat Mirziyoyevning 2018-yil 28-dekabrda Oliy Majlis deputat-lariga yo'llagan Murojaatnomasida ushbu masalaga alohida urg'u berildi. Jumladan, o'tgan yilda Jahon banki, Yevropa tiklanish va taraqqiyot banki, Islom va Osiyo taraqqiyot banklari, boshqa xalqaro moliya institutiari. bilan olib borilgan hamkorlik natijalariga ko'ra, mamlakatimizda investitsiyalar hajmi 8,5 milliard dollarni tashkil etgani, shuningdek, chet el investitsiyalari hisobidan 23 milliard dollarni tashkil etuvchi 456 ta oyiha amalga oshini ayotgani ta'kidlandi. Prezidentimiz ushbu ko'rsatkichlarga ahamiyat qaratar ekan, keng miqyosii investit siyalar yurtimiz iqtisodiyotini mustahkamlovchi omil bo'lishini alohida ta'kidlab, shunday dedi: "Jahon tajribasi shuni ko'rsatadiki, qaysi davlat faol investitsiya siyosatini yuritgan bo'lsa, o'z iqtisodiyotining barqaror o'sishiga erishgan. Shu sababli ham investitsiya bu iqtisodiyot drayveri, o'zbekcha aytganda, iqtisodiyotning yuragi. desak, mubolag'a bo'lmaydi"

Adabiyotlar sharhi

Turizmda investitsion faoliyat va uning amal qilish xususiyatlarini tadqiq etishdan avval investitsiya faoli yatining mazmun-mohiyati va o'ziga xos xususiyatlarini yoritish darkor. Xususan, ko'plab xorijiy va mahalliy nashrlarda investitsiyalar hamda investitsion faoliyat masalalarining ayrim jihatlari yoritilgan.

Chubarinning fikricha, "investitsiya faoliyati investitsiya jarayoni ishtirokchilarining kapitalni to'plash, o'zgartirish, joylashtirish, qo'yish va ulardan foydalanish bilan bog'liq holda yuzaga keladigan, iqtisodiy tizimda maksima ijobiy iqtisodiy va ijtimoiy natija olishga qaratilgan munosabatlari yig'indisidir". Turizmda Investitsion. faoliyat va uning tashkiliy-iqtisodiy masalalari ham ko'plab o'imlarning ilmiy-tadqiqot ishlarida o'z aksini topgan bo'lib, ularning aksariyat

qismi bir-birini to'ldirishga xizmat qiladi Valinurovaning qayd etishicha, "turizm sohasi dagi investitsion faoliyat investitsiya sifatida kiriti gan mablag'lardan daromad olish uchun ma'lum bir mam-lakat ichida va tashqarisida turizm sanoatiga uzoq muddatli kapital qo'yilmalar shaklida moliyaviy resurs ardan foydalanishni o'z ichiga oladi.

Fatxutdinovning esa, "Investitsiyalar bu kapitalni saqlash va oshirish maqsadidagi pulik quyilmalardir" Shuningdek, iinvestitsiya faoliyatini amalga oshirishning tashkiliy mexanizmining amal qilish xususiyati iqti sodiyotdagi tarkibiy islohotlarni yanada chuqurlashtirish, korxonalarning investitsion faoliyatini yanada jonlant irish, xorijiy investitsiyalami, avvalo, to'g'ridan-to'g'ri xorijiy investitsiyalarni keng jarb etish va ulardan samarail foydalanish, ishlab chiqarishni modernizatsiya qilish, texnik va texnologik qayta qurollantirish orqali yangi ish o'rinlarini shakllantirish dir deb izoh berib o'tishgan

Vyakina esa "turizm sohasidagi investitsiyalar kapital hisobidan turli sayyohlik xizmatlarini ko'rsatishga qodir bo'gan turistik obyektlarini yaratish, modernizatsiya qilish yoki rekonstruksiya qilish jarayonidir" deya ta'rif keltirgan Mamlakatimizda ham turizm sohasida investitsion faoliyat amal qilishining mexanizmlari va tashkiliy-iqtisodiy masalalari atroflicha tadqiq etilgan. Xususan, Allanazarov turizmda investitsion faoliyatning amal qilishini quyidagicha izohlaydi: "turizmda investitsion faoliyat bu investitsiya jarayoni ishtirokchilarining kapitalni jamg'arish, o'zgartirish, joylashtirish bilan bog'liq holda yuzaga keladigan munosabatlarni bolib, turizm sohasida makro va mikro darajada maksimal ijobiy iqtisodiy va ijtimoiy natija olishga qaratilgan kapitaldan foy dalanish jarayonidir".

Metadologiya

Tadqiqotning metado ogiyasini ishlab chiqish jarayonida turizm sanoatida investitsiyalarning ahamiyati. investitsion muhitni shakllantirish omillari tizimlashtirildi. To'g'ridan-to'g'ri investitsiyalarni jalb qilishda mam lakatniy siyosiy, iqtisodiy sohalarining ta'siri o'rganildi. Shu bilan birga tadqiqot ishiga oid fikrlarni tahlil qilish jarayonida deduksiya, analiz, sintez usullaridan keng foydalanildi.

Tahlil va natijalar

2022-yilda esa 9,5 mlrd dollardan ziyod to'g'ridan-to'g'ri xorijiy sarmoyalarni o'zlashtirish, 282 ta yirik va 9 mingdan ortiq hududiy loyihalar ishga tushirish mo'ljallangan. Eksport hajmini 14 mird dollarga yetkazish hisob-kitob qilingan. O'zbekiston iqtisodiyotiga 50 dan ortiq davlat investitsiya kiritmoqda. Asosiy investor davlatar beshligiga esa quyidagilar kiradi:

1. Xitoy-2.2 mird dollar;
2. Rossiya-2,1 mird dollar;
3. Turkiya 1,18 mird dollar,
4. Germaniya-800,7 million dollar,
5. Janubiy Koreya 137,4 million dollar

Bugungi kunda chet el investitsiyalarining aksariyat qismi nazariy va uslubiy bazani rivojlantirishda yetar licha yaratilmagan. Respublikada sayyohlik korxonalari masalalari bo'yicha qabul qilingan hujjatning turizm va investitsiya

qonunlari va nizomlari xususiyatlari toliq e'tiborga olinmaydi. Turizmga investitsiyalarni jalb qilish bo'yicha talab va takliflar sektori bo'lishi quyidagilarni o'zida ifodalaydi6:

Turizm sohasini rivojlantirish va ushbu sohaga investitsiyalami keng jalb qilish,

Xorijiy tajribalarni jalb qilish;

Turizm xizmatlarining yangi turari va turkumlarini yaratish,

Keng miqyosii investitsiyalarni jalb qilish uchun kriteriyalami rivojlantirish;

Chet el investitsiyalarini keng jalb qilishda turizmning qo'shimcha imtiyozlarini qo'llash;

Investitsiya muhitini yaratish va yanada takomillashtirish;

Me'yoriy jihatdan jaib etish uchun keng miqyosii investitsiyalarning huquqiy asoslarini takomillashtirish;

Sayyohlik xizmatlarining sonini va sifatini oshirish;

Turizm sohasidagi samaradorlik kursori tizimini ishlab chiqarish:

Investitsiyalarni nazorat qilish va monitoringini takomillashtirish.

O'zbekiston ham ko'plab madaniy yodgorliklarga boy bo'lgan tarixiy shaharlar mavjudligi bilan turizm sohasiga chet el investitsiyalarni jalb qilishda yetakchi mamlakatlar qatoridan o'rin olgan dav at hisoblanadi. Tanlangan mavzuning dolzarbligi ham ana shu vazifalarni o'rganishni taqozo etadi.

Iqtisodiyotni rivojlantirishda investitsiyalarming roli shundan iboratki, ular tufayli ijtimoiy kapita to'planishi. ilmiy-texnikaviy taraqqiyotning rivojlanishi, fan va texnika yutuqlarini ijodiy faoliyatning turli soha ariga o'tka-zish orqali joriy etish Natijada investitsiyalar milliy iqtisodiyotning ishlab chiqarish imkoniyatlarini kengaytirish, jamiyat hayoti sifatini yaxshilash va iqtisodiy yuksalishning asosi hisoblanadi

O'zbekiston Lonely Planet tomonidan Osiyoda sayohat qilish uchun eng yaxshi joylar reytingiga kiritilgan. O'zbekiston Janubiy Koreyadan keyin ikkinchi o'rinda turadi. Shuni ta'kidlash kerakki, mamlakatimiz Lonely. Planet reytingida Vetnam, Yaponiya, Tailand, Nepal, Shri-Lanka, Xitoy va Indoneziya kabi an'anaviy va "targ'ib qilingan mamlakat ardan oldinda. 40 mamlakatning xorijiy ommaviy axborot vositalarida O'zbekiston haqida materiallar nashr etilishi ta'minlandi, 20 dan ortiq mamlakatlardan 50 ga yaqin xorijiy ommaviy axborot vosita ari vakillari uchun info-turiar tashkil etildi. Faqatgina Xitoyning CCTV-7 telekanalining O'zbekistonda gastronomik turizm haqidagi hikoyasini 150 millionga yaqin kishi tomosha qildi.

O'zbekiston gastronomik turizm bo'yicha mashhur mamiakatlar reytingida MDHdagi eng yaxshi besh mamlakat qatoriga kirdi. O'zbekiston xavfsiz mamlakatlar reytingida dunyoda 2-o'rinda turadi.

- Investitsiya loyihalari samaradorligini baholash texnik, texnologik, moliyaviy, tarmoq yoki hududiy xususi yatlaridan qat'i nazar, yagona tamoyillar asosida amalga oshiriladi. Bularga quyidagilar kiradi:
- loyihani uning butun hayotiy sikli (hisob-kitob davri) davomida ko'rib chiqish;

- investitsiya oldidan tadqiqotlarni o'tkazishdan to loyihani tugatishgacha,turli valyutalardan foydalanish imkoniyatini hisobga olgan holda hisob kitob davri uchun loyihani amalga oshirish bilan bog'liq barcha pul tushumlari va xarajatlarini o'z ichiga olgan pul oqim arini modellashtirish;
- turli loyihalami (loyiha variantiarini) solishtirish shartlarining solishtiri ishi;
- pozitivlik va maksimal ta'sir Investitsion loyiha investor nuqtayi nazaridan samarali deb tan olinishi uchun, birinchidan, uni amalga oshirish samarasi ijobiy bo'lishi kerak, ikkinchidan, muqobil investitsiya. loyihalarini solishtirganda, eng yuqori samaradorlikka ega loyihaga ustunlik berildi;
- vaqt omi ini hisobga olgan holda. Loyihaning samaradorligini baholashda vaqt omilining turli jihatlari, shu jumadan loyiha parametrlarining dinamik igi (vaqtning o'zgarishi) va uning iqtisodiy muhiti, mahsulot ishlab chiqarish o'rtasidagi vaqtdagi bo'shiq ar (kechikishiar) hisobga olinishi kerak. yoki resursiami olish va ulami to'lash, har xil vaqt va (yoki) natijalardagi xarajat arning nomutanosibligi (avva gi natijalar va keyingi xarajatlarni afzal ko'rish);
- faqat loyihani amalga oshirish jarayonida kelajakdagi xarajatlar va daromadlarni, shu jumladan igari yaratilgan ishlab chiqarish aktivlarini jalb qilish bilan bog'liq xarajatlarni, shuningdek loyihani amalga oshirish bilan bevosita bog'liq bo‘lgan kelajakdagi yo'qotishlarni hisobga olish (masalan, mavjud ish ab chiqarishni to'xtatish bilan bog'liq holda), o'miga yangisini tashkil qilish bilan) Loyihada foydalanilgan. ligari yaratilgan resurslar ulami yaratish qiymati bilan emas, balki yo'qotilgan foydaning maksimal qiy matini aks ettiruvchi imkoniyat qiymati (opportunity cost) bo'yicha baholanadi;
- loyihaning barcha eng muhim oqibatlarini hisobga olgan hoida. Investitsiya loyihasining samaradorligini aniqlashda uni amalga oshirishning barcha oqibatlari bevosita iqtisodiy va iqtisodiy bo'lmagan (tashqi ta'sirar, davlat foydalari) hisobga olinishi kerak. Ularning samaradorlikka ta'sirini miqdoriy jihatdan aniqlash mumkin bo'lsa, uni miqdoriy jihatdan aniqlash kerak. Boshqa hollarda, bu ta'sir mutaxassislar tomonidan hisobga olinishi kerak;

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IQLIMNING TA'SIRINI HISOBGA OLGAN HOLDA BINOLARNING TASHQI DEVORLARINI LOYIHALASH

Annotatsiya: *Ushbu maqolada iqlim sharoitining binolarning tashqi devorlariga ko'rsatadigan ta'siri tahlil qilinadi hamda energiya tejamkorlik, issiqlik izolyatsiyasi va barqaror qurilish tamoyillari asosida tashqi devorlarni loyihalash yondashuvlari bayon etiladi. Maqolada turli iqlim mintaqalari uchun optimal devor konstruksiyalari tahlil qilinib, zamonaviy materiallar va texnologiyalarni qo'llashning ahamiyati ko'rsatib beriladi.*

Kalit so'zlar: *iqlim, tashqi devor, issiqlik izolyatsiyasi, energiya tejamkorlik, qurilish materiallari, barqaror arxitektura.*

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DESIGNING THE EXTERIOR WALLS OF BUILDINGS TAKING INTO ACCOUNT THE INFLUENCE OF CLIMATE

Abstract: *This article analyzes the influence of climatic conditions on the exterior walls of buildings, and outlines approaches to the design of exterior walls based on the principles of energy conservation, thermal insulation and sustainable construction. The article analyzes optimal wall designs for different climatic regions and shows the importance of using modern materials and technologies.*

Keywords: *climate, exterior wall, thermal insulation, energy saving, building materials, sustainable architecture.*

Iqlim binolarning energiya samaradorligi va uzoq muddatli bardoshliligida hal qiluvchi ahamiyat kasb etadi. Arxitektura va qurilish sohasida olib borilayotgan zamonaviy yondashuvlar shuni ko‘rsatmoqdaki, har bir hududning o‘ziga xos tabiiy-iqlimiy sharoitlarini inobatga olgan holda binolarni loyihalash nafaqat yashash uchun qulay shart-sharoit yaratadi, balki energiya iste’molini sezilarli darajada kamaytiradi. Bu esa, o‘z navbatida, umumiy ekspluatatsion xarajatlarni qisqartiradi va ekologik barqarorlikni ta’minlashga xizmat qiladi.

Xususan, binolarning tashqi devorlari iqlim omillariga eng ko‘p duch keladigan va issiqlik almashinuvining asosiy kanali bo‘lib xizmat qiladi. Issiqlik yo‘qotilishi bo‘yicha statistik tahlillar shuni ko‘rsatadiki, bino ichki haroratining 30-40% gacha tashqi devorlar orqali yo‘qoladi. Shu sababli, tashqi devorlarning konstruksiyasi, materiali, qalinligi va izolyatsion qatlamlari binoning energiya samaradorligini belgilovchi asosiy omillar sirasiga kiradi.

Bino joylashuvi — ya’ni u qaysi iqlim zonasida qurilayotganligi, o‘rtacha yillik harorat, ekstremal harorat farqlari, nisbiy namlik darajasi, yog‘ingarchilik miqdori va quyosh radiatsiyasi darajasi — bularning barchasi devor konstruksiyasini tanlashda bevosita ahamiyatga ega. Masalan, sovuq iqlimli mintaqalarda devorlar yuqori darajadagi issiqlik izolyatsiyasiga ega bo‘lishi zarur, issiq va nam iqlimli hududlarda esa devorlarning nafas oluvchanligi, quyosh nurlanishini qaytarish xususiyati va ventilyatsiyaga imkon beruvchi konstruktiv yechimlar afzal bo‘ladi.

Bundan tashqari, shamol tezligi va yo‘nalishi ham tashqi devorlar mustahkamligini, gidroizolyatsiya qatlamlari mavjudligini taqozo etadi. Devorlar shamol bosimiga bardosh beradigan darajada loyihalanmasa, vaqt o‘tishi bilan konstruktiv deformatsiyalar, yoriqlar, issiqlik yo‘qotilishi va namlanishlar yuzaga keladi. Ayniqsa, havo namligi yuqori bo‘lgan joylarda devorlar orqali suv bug‘lari kondensatsiyasi xavfi mavjud bo‘lib, bu holat devorning tez yemirilishiga olib keladi.

Shu boisdan, har bir hudud uchun geoiqlimiy omillarni hisobga olgan holda optimal devor konstruksiyasini tanlash, issiqlik o‘tkazuvchanlik koeffitsientlarini hisoblash va qurilish materiallarining fizik-mexanik xossalarini tahlil qilish zarur hisoblanadi. Bunday yondashuv faqat bino foydalanuvchilarining qulayligini emas, balki binoning ekspluatatsion muddatini uzaytirish va xizmat ko‘rsatish xarajatlarini kamaytirishni ham ta’minlaydi.

Quyida **iqlim omillarining devor konstruksiyalariga ta’siri**ni ko‘rsatuvchi **jadval** keltirilgan.

1-jadval.

Iqlim omillarining devor konstruksiyalariga ta’siri

Iqlim omili	Tavsif	Tavsiya etilgan konstruktiv yechimlar va materiallar
Harorat farqlari	Haroratning keskin farqlanishi (sovuq yoki issiq iqlim) devorlar orqali issiqlik almashinuviga katta ta’sir ko‘rsatadi.	- Sovuq iqlim: ko‘p qatlamli devor, issiqlik izolyatsiyasi (mineral paxta, EPS, XPS) - Issiq iqlim: yorug‘likni qaytaruvchi qoplama, havo qatlamlari, ventilyatsiyalangan fasadlar
Namlik va yog‘ingarchilik	Yog‘ingarchilik ko‘p bo‘lgan hududlarda devorlar suv ta’siriga bardoshli bo‘lishi kerak.	- Gidroizolyatsion qatlamlar (bitumli membrana, suv o‘tkazmaydigan plomba) - Namlikka chidamli materiallar: beton, g‘isht, maxsus suvga chidamli bo‘yoqlar yoki plitalar
Shamol bosimi	Shamoli kuchli hududlarda bosim devorlarda stress va deformatsiya yuzaga keltirishi mumkin.	- Mustahkam konstruksiyalar (temir-beton karkas, armaturalangan g‘isht devorlar) - Aerodinamik tahlil asosida devorlarni joylashtirish - Deformatsiyaga bardoshli materiallar

Issiqlik izolyatsiyasi. Iqlimga qarab turli issiqlik izolyatsiya materiallari qo‘llaniladi:

- Sovuq iqlimda — mineral paxta, ko‘pikli polistirol, bazalt plitalar;
- Issiq iqlimda — yengil va quyosh nurlanishini qaytaruvchi materiallar.

Material tanlovi. Iqlim sharoitiga mos material tanlash muhim:

- G‘ishtli devorlar — issiqlikni ushlab qolish uchun yaxshi;
- Penobeton va gazobeton — engil va tejamkor;
- Ventilyatsiyalangan fasadlar — iqlim nazoratiga hissa qo‘shadi.

Energiya tejamkor yondashuvlar. Quyosh energiyasidan foydalanish uchun passiv dizayn elementlari (masalan, quyosh panjaralari);

- Termal massa (qalin devorlar) orqali issiqlikni saqlab qolish;
- Rangsiz shaffof oyna materiallaridan foydalanish orqali yoritish va energiya sarfini kamaytirish.

Iqlimiy sharoit tahlili

O‘zbekiston — kontinental iqlim zonasiga kiruvchi davlat bo‘lib, bu yerda:

- **Yoz oylarida** havo harorati +40 °C gacha ko‘tariladi (ayniqsa, Qizilqum va Buxoro viloyatlarida);
- **Qish oylarida** esa -15 °C va undan past haroratlar kuzatiladi (Toshkent viloyatining tog‘ oldi hududlari, Farg‘ona vodiysi va Surxondaryo tog‘li zonalari);
- Haroratning **yillik farqi 50–60 °C** ni tashkil qilishi mumkin;

- Namlik darajasi past bo‘lib, yog‘ingarchilik asosan bahor va kuzda tushadi;
- Shamol tezligi va quyosh radiatsiyasi nisbatan yuqori.

Bu keskin farqlar binolarning tashqi devorlariga yuqori talablarni qo‘yadi: ular **sovuqdan izolyatsiya qila olishi**, **issiqda devorni qizib ketishidan himoya qilishi**, va **namlik, chang, shamol kabi tashqi omillarga bardoshli** bo‘lishi lozim.

2-jadval.

O‘zbekiston uchun devor konstruksiyasini mos qatlam yechimi.

Qatlam	Tavsif
1. Ichki g‘isht (25 sm)	Strukturaviy barqarorlikni ta'minlaydi, issiqlik inertligi yuqori, ichki haroratni saqlab turadi.
2. Issiqlik izolyatsiyasi (5–10 sm)	Mineral paxta, bazalt plita yoki ko‘pikli polistirol (XPS/EPS) – issiqlik yo‘qotilishini kamaytiradi.
3. Havo qatlam (2–4 sm)	Termal barer sifatida xizmat qiladi, kondensatsiyani oldini oladi.
4. Tashqi pardevor (fasad, 10–15 sm)	G‘isht, dekorativ beton yoki ventilyatsiyali qoplama — quyoshdan himoya va ob-havoga bardoshlilikni ta’minlaydi.

Tavsiyalar: Issiqlik ko‘rsatkichlari bo‘yicha hisob-kitob: Qurilish me’yorlariga ko‘ra, Toshkent sh. uchun qishki issiqlik qarshilik koeffitsienti devorlar uchun **$R \geq 3.2$ m²·K/W** bo‘lishi tavsiya qilinadi.

Rang tanlovi: Yozda devorning qizishini kamaytirish uchun tashqi qatlamni och ranglarda bajarish tavsiya etiladi (oq, bej, och kulrang).

Energiya samaradorligini oshirish:

- Issiqlik uzatishni kamaytiruvchi uzluksiz izolyatsiya qatlamlari;
- Qishda quyosh nurlaridan maksimal foydalanish uchun janubiy tomonlarda oynalarning sathini kattalashtirish;
- Ko‘p qatlamli oynali romlar (kamida 2-3 qatlamli, argon gazli) orqali issiqlik yo‘qotilishini kamaytirish.

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TABIIY VA SINTETIK NARKOTIK VOSITALAR. FOYDASI VA ZARARLARINI O‘RGANISH

Annotatsiya. *Ushbu maqolada tabiiy va sintetik narkotik moddalar haqida kengaytirilgan tahlil berilgan. Maqola narkotik moddalarning foydalari va zararlarini, shuningdek, ularning tibbiyotda qanday ishlatilishini va potentsial xavflarini ko‘rib chiqadi. Tabiiy narkotiklar, masalan, morfin, kodein va marixuana, og‘riqni kamaytirishda va ba'zi jismoniy hamda psixologik kasalliklarni davolashda samarali vositalar bo‘lib, ammo uzoq muddatli foydalanishda qaramlik va boshqa salbiy ta'sirlarni keltirib chiqarishi mumkin. Sintetik narkotiklar, ayniqsa fentanil va metamfetamin kabi kuchli moddalarning xavfli ta'sirlari va nojo‘ya oqibatlari mavjud. Ushbu maqolada narkotik moddalarning ijtimoiy va tibbiy jihatlari hamda ularning noto‘g‘ri ishlatilishining jamiyatga olib keladigan salbiy oqibatlari muhokama qilinadi.*

Kalit so‘zlar: *Narkotiklar, tabiiy narkotiklar, sintetik narkotiklar, morfin, kodein, marixuana, opium, kokaingina, fentanil, metamfetamin.*

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NATURAL AND SYNTHETIC DRUGS. STUDY OF THEIR BENEFITS AND HARMS

Abstract. *This article provides an extended analysis of natural and synthetic drugs. The article examines the benefits and harms of drugs, as well as their medical uses and potential risks. Natural drugs, such as morphine, codeine, and marijuana, are effective in reducing pain and treating some physical and psychological*

illnesses, but long-term use can cause addiction and other negative effects. Synthetic drugs, especially potent ones such as fentanyl and methamphetamine, have dangerous effects and side effects. This article discusses the social and medical aspects of drugs and the negative consequences of their misuse on society.

Keywords: *Drugs, natural drugs, synthetic drugs, morphine, codeine, marijuana, opium, cocaine, fentanyl, methamphetamine.*

Kirish. Narkotik moddalar inson organizmiga turli ta'sirlar ko‘rsatadigan, odamning aqliy va jismoniy holatini o‘zgartiradigan kimyoviy birikmalardir. Ular tibbiyotda og‘riqni yengillashtirish, uyquni tartibga solish yoki turli kasalliklarni davolashda ishlatiladi. Ammo, narkotik moddalar noto‘g‘ri yoki beparvo foydalanishda jiddiy zararlar keltirib chiqarishi mumkin. Bu maqolada tabiiy va sintetik narkotiklarning foydalari va zararlarini ko‘rib chiqamiz. Narkotiklar - bu kimyoviy moddalardir, ular inson organizmiga turli ta'sirlar ko‘rsatadi. Ular odamning aqliy, jismoniy va ruhiy holatiga sezilarli o‘zgarishlar kiritishi mumkin. Narkotiklarning ta'siri kuchli bo‘lib, ular asosan og‘riqni kamaytirish, uyquni tartibga solish, kayfiyatni o‘zgartirish yoki boshqa maqsadlar uchun ishlatiladi.

Shuningdek, narkotiklar noto‘g‘ri yoki beparvo foydalanilganda jiddiy salbiy ta'sirlar, jumladan qaramlik va o‘limga olib kelishi mumkin. Narkotiklar tabiiy va sintetik turlarga bo‘linadi. Ularning har biri o‘ziga xos xususiyatlarga ega bo‘lib, ularning foydalari va zararlarini to‘liq tushunish inson salomatligi va jamiyat uchun katta ahamiyatga ega. Narkotiklar tarixan uzoq davrlar davomida insoniyatning kundalik hayotida mavjud bo‘lib kelgan. Ular tibbiyotda, tibbiy og‘riqni kamaytirish, uyquni tartibga solish yoki ruhiy holatni yaxshilashda ishlatilgan. Dastlab, narkotiklar o‘simliklardan olinib, oddiy dorivor vositalar sifatida qo‘llanilgan. Biroq, bu moddalarning kuchli ta'siri va uzoq muddatli foydalanishda yuzaga keladigan qaramlik xavfi, narkotiklarni butun dunyo bo‘ylab xavfli va noqonuniy moddalarga aylantirdi.

Ishning maqsadi: Ushbu tabbiy va sintetik narkotik vositalarining organizmga ko‘rsatadigan foydali va zararli xususiyatlarini o‘rganish.

Tadqiqotning material va metodi: Bu tadqiqotdan organizmning biologik kimyoviy kurashuvchanligini o‘rganish, ularni ta’sir etish prinspi,tashqi muhitdan organizmga kiritilayotgan dori vositalari bilan organizmning unga bo‘lgan javob reaksiyalarini, nerv asab tizimi,endokrin sistemalar, miya va miyachaga ta’sir mehanizmi, ayirish va himoya organlarida ro‘y berayotgan o‘zgarishlarni aniqlash, ularni foydalanish uchun ratsion norma va qo‘llanmalar ishlab chiqib organizmda ro‘y berayotgan foydali va zararli tasirlariga xulosa chiqarish.

Asosiy qism: Tabiiy narkotiklar: ta'rifi, foydalari va zararlari

Tabiiy narkotiklar, o‘simliklar yoki hayvonlardan olinadigan moddalar bo‘lib, ular asrlar davomida turli tibbiy va ijtimoiy maqsadlar uchun ishlatilgan. Tabiiy narkotiklarning asosiy xususiyati ularning kuchli og‘riqni yengillashtiruvchi, tinchlantiruvchi va ba'zan ruhiy holatni o‘zgartiruvchi ta'sirga ega bo‘lishidir. Bu moddalar asosan alkaloidlar yoki boshqa kimyoviy birikmalardan iborat bo‘lib, tibbiyotda og‘riqlarni kamaytirish, uyquni yaxshilash va boshqa ba'zi kasalliklarni

davolashda qo‘llaniladi. Ammo tabiiy narkotiklarning uzoq muddatda yoki noto‘g‘ri ishlatilganda jiddiy salbiy ta'sirlari bo‘lishi mumkin.

Tabiiy narkotiklar nima?

Tabiiy narkotiklar o‘simliklardan olingan yoki hayvonlar tomonidan ishlab chiqarilgan moddalardir. Ular ko‘pincha og‘riqni kamaytirish, tinchlantirish yoki ruhiy holatni o‘zgartirish kabi ta'sirlar ko‘rsatadi. Tabiiy narkotiklarning eng mashhur misollaridan biri opium (makkajo‘xori) bo‘lib, u bir qancha alkaloidlar – morfin, kodein va thebain kabi moddalarni o‘z ichiga oladi. Opium, ayniqsa, og‘riqlarni yengillashtirishda ishlatiladi.

Tabiiy narkotiklar: Asosiy turlari

Opium va uning hosilalari- Opium, makkajo‘xori (Papaver somniferum) o‘simligidan olinadi va uning tarkibida morfin, kodein, thebain kabi alkaloidlar mavjud. Opium uzoq yillar davomida og‘riqni kamaytirish va turli kasalliklarni davolashda ishlatilgan.

Morfin-Morfin opiumning eng kuchli va eng mashhur alkaloidi hisoblanadi. U juda samarali og‘riqni yengillashtiruvchi vosita bo‘lib, operatsiyalardan keyin yoki og‘ir jarohatlar bilan og‘rigan bemorlarga ko‘rsatiladi. Biroq, morfin uzoq muddatda ishlatilsa, qaramlikni keltirib chiqarishi mumkin.

Kodein-Kodein, morfindan kamroq kuchli bo‘lib, yengil og‘riqlarni davolashda va yo‘talni bas qilishda ishlatiladi. Kodein ham narkotik xususiyatlarga ega bo‘lsa-da, morfin kabi kuchli qaramlikni keltirib chiqarmaydi, ammo uzoq muddatli foydalanish muammolarni keltirib chiqarishi mumkin.

Koka o‘simligi (Erythroxylum coca)-Koka o‘simligi, ayniqsa, Janubiy Amerika mintaqasida uchraydi va uning barglaridan kokaingina alkaloidi olinadi. Koka barglari, asrlar davomida energiya beruvchi, og‘riqni kamaytiruvchi va giyohvandlikka qarshi vosita sifatida ishlatilgan. Koka, ayniqsa, yuqori balandliklarda ishlov berish yoki jismoniy yuklamalar bilan bog‘liq ishlarda quvvat beruvchi vosita sifatida ishlatilgan. Ammo kokaingina narkotik sifatida foydalanilganda, u tezda qaramlikni keltirib chiqaradi va odamning ruhiy holatini jiddiy ravishda o‘zgartiradi.

Marixuana (Cannabis sativa)-Marixuana, ya'ni kannabis, o‘simlikning quritilgan qismlaridan olinadigan psixoaktiv moddalarga ega bo‘lib, u asosan tetrahidrokannabinol (THC) tarkibida bo‘ladi. Marixuana qadim zamonlardan beri og‘riqni kamaytirish, kayfiyatni ko‘tarish va tashvishlarni yengillashtirish maqsadida ishlatilgan. Marixuana tibbiy maqsadlar uchun ko‘proq ishlatilmoqda, chunki u ba'zi jismoniy va psixologik muammolarni yengillashtiradi, masalan, xronik og‘riqlar va stressni kamaytirish.

Opiyatlar (Papaver somniferum)-Opiyatlar opiumdan olingan boshqa moddalardir va ular og‘riqni kamaytirish va tinchlantirishda ishlatiladi. Opiyatlarning eng mashhuri morfin bo‘lib, u ba'zi tibbiy holatlarda ishlatilsa-da, uning uzoq muddatda foydalanilishi qaramlik va boshqa salbiy ta'sirlarga olib kelishi mumkin.

Tabiiy narkotiklarning foydalari:

Tabiiy narkotiklar tibbiyotda uzoq vaqt davomida samarali vosita bo‘lib xizmat qilgan. Ularning asosiy foydalari quyidagilar:

Og‘riqni kamaytirish-Tabiiy narkotiklar, ayniqsa, morfin va kodein kabi moddalar, kuchli og‘riqlarni tezda va samarali yengillashtirishda ishlatiladi. Bu moddalar ko‘pincha og‘ir jarohatlar yoki jiddiy operatsiyalardan keyin qo‘llaniladi.

Tibbiy maqsadlar-Tabiiy narkotiklar ba'zi jiddiy kasalliklarni davolashda yordam beradi. Masalan, marixuana xronik og‘riqlar va kimyoterapiya davrida paydo bo‘ladigan yon ta'sirlarni kamaytirishda foydalidir. Kodein esa yo‘talni bas qilishda ishlatiladi.

Ruhiy holatni yaxshilash-Marixuana va koka o‘simligi kabi moddalar kayfiyatni ko‘tarish va stressni kamaytirishda foydalidir.

Tabiiy narkotiklarning zararlari

Tabiiy narkotiklar, agar noto‘g‘ri yoki uzoq muddatda ishlatilsa, ko‘plab zararli ta'sirlarga olib kelishi mumkin:

Qaramlik-Morfin, kodein, kokaingina kabi tabiiy narkotiklar uzoq muddatda ishlatilsa, ular qaramlikka olib kelishi mumkin. Qaramlik odamning ijtimoiy va ruhiy holatini jiddiy ravishda buzadi.

Jismoniy va psixologik salbiy ta'sirlar-Tabiiy narkotiklar uzoq muddatda ishlatilganda nafas olishning susayishi, yo‘dlash va konsentratsiya qilishdagi muammolar, ruhiy holatdagi o‘zgarishlar, depressiya va anksiyete kabi salbiy ta'sirlarni keltirib chiqarishi mumkin.

Noqonuniy foydalanish-Tabiiy narkotiklarning ko‘plab turlari, ayniqsa opium va koka o‘simliklarining giyohvandlik sifatida ishlatilishi noqonuniy va xavfli hisoblanadi. Bunday moddalar ijtimoiy va iqtisodiy muammolarga olib keladi va jinoyatchilikka sabab bo‘ladi.

Tabiiy narkotiklar tibbiyotda ko‘plab foydali xususiyatlarga ega bo‘lsa-da, ular noto‘g‘ri yoki uzoq muddatda ishlatilganda jiddiy zararlar keltirishi mumkin. Morfin, kodein, marixuana va koka o‘simligi kabi moddalar og‘riqni kamaytirish, kayfiyatni yaxshilash va boshqa tibbiy maqsadlar uchun ishlatiladi. Biroq, ularning qaramlik va boshqa salbiy ta'sirlari haqida ham unutmaslik joizdir. Tabiiy narkotiklardan faqat shifokor tavsiyasi bilan va belgilangan dozada foydalanish kerak.

Sintetik narkotiklar: Ta'rifi, foydalari, zararlari va xavflari

Sintetik narkotiklar — bu odam organizmiga kuchli ta'sir ko‘rsatadigan, kimyoviy yo‘l bilan ishlab chiqarilgan moddalardir. Ular asosan og‘riqni kamaytirish, kayfiyatni o‘zgartirish, psixoaktiv ta'sir ko‘rsatish yoki boshqa tibbiy maqsadlar uchun ishlatiladi. Sintetik narkotiklar tabiiy narkotiklardan ko‘ra kuchliroq bo‘lishi mumkin va tezda qaramlikka olib kelishi mumkin. Ularning ko‘pchiligi og‘riqni kamaytirish, uyquni yaxshilash, kayfiyatni ko‘tarish va ruhiy holatni o‘zgartirish kabi maqsadlar uchun ishlatilsa-da, noto‘g‘ri yoki beparvo foydalanish jiddiy salbiy ta'sirlarga olib keladi. Sintetik narkotiklar o‘zining kuchli ta'siri va xavfli yon ta'sirlari kabi fikrlar bilan bizga ma’lum hisoblanadi.

Sintetik narkotiklar Nima?-Sintetik narkotiklar kimyoviy yo‘l bilan ishlab chiqarilgan, odatda tabiiy manbalardan olingan moddalarning sintetik versiyalari

bo‘lib, ular o‘z tarkibida psixoaktiv, og‘riqni kamaytiruvchi yoki boshqa tibbiy ta'sirlarni ko‘rsatadigan kimyoviy birikmalarni o‘z ichiga oladi. Sintetik narkotiklar ko‘pincha narkotik qaramlikni keltirib chiqaruvchi kuchli moddalardan tashkil topgan bo‘lib, ular o‘ziga xos xavflarni va xavfli yon ta'sirlarni yaratadi.

Sintetik narkotiklar eng ko‘p ishlatiladigan va keng tarqalgan sinflari opioidlar, giyohvandlikka olib keluvchi stimulyatorlar, ba'zi antipsixotiklar va antidepressantlar, shuningdek, sedativlar va anksiolitiklar kabi moddalardan tashkil topgan.

Sintetik opioidlar- tabiiy opioidlar (masalan, morfin va kodein) o‘rnini bosgan va ko‘pincha ularning kuchliroq versiyalari hisoblanadi. Sintetik opioidlar o‘zining kuchli ta'siri bilan og‘riqni tezda kamaytiradi, ammo ular hamda tabiiy narkotiklar kabi qaramlikka olib kelishi mumkin. Sintetik opioidlar og‘riqni yengillashtirish uchun, ayniqsa og‘ir jarohatlar va operatsiyalar so‘ngida bemorlar uchun ishlatiladi. Ularning eng mashhur vakillari quyidagilardir:

Fentanil- bu sintetik opioid bo‘lib, u morfindan 50-100 marta kuchliroqdir. Fentanil og‘riqni kamaytirish va yirik jarohatlar yoki operatsiyalar so‘ngida bemorlarning holatini yaxshilash uchun ishlatiladi. Ammo, uning juda kuchli ta'siri bor, shuning uchun noto‘g‘ri ishlatilganda yoki ortiqcha dozada o‘limga olib kelishi mumkin. Fentanilning eng xavfli xususiyati shundaki, juda kichik dozasi ham halokatli bo‘lishi mumkin, va bu uning noqonuniy foydalanishida xavf tug‘diradi.

Metadon-Metadon og‘riqni kamaytirishda ishlatiladi va ayniqsa opioid qaramlikni davolashda qo‘llaniladi. Metadon -bu sintetik opioid bo‘lib, ko‘plab bemorlarda uzoq muddatli davolashda samarali bo‘lishi mumkin. Biroq, metadon ham qaramlikka olib kelishi mumkin, va uning uzoq muddatli ishlatilishi jismoniy sog‘liqni yomonlashtirishi mumkin.

Tramadol-Tramadol bu yengil va o‘rta darajadagi og‘riqlarni davolashda ishlatiladigan sintetik opioid. U boshqa opioidlarga nisbatan kuchsiz bo‘lsa-da, uzoq muddatda ishlatilganda qaramlikni keltirib chiqarishi mumkin.

Sintetik stimulyatorlar

Sintetik stimulyatorlar- bu narkotiklar, odatda markaziy nerv tizimiga ta'sir ko‘rsatib, odamni uyg‘otish, energiya berish va kayfiyatni ko‘tarish kabi ta'sirlarni ko‘rsatadi. Bu moddalarning ba'zilari qonunda taqiqlangan va noqonuniy bo‘lib, ular juda xavfli hisoblanadi.

Metamfetamin-Metamfetamin bu kuchli sintetik stimulyator bo‘lib, markaziy nerv tizimiga ta'sir qiladi. Bu modda ba'zan "crystal meth" deb ataladi. Metamfetamin ko‘plab salbiy ta'sirlarga olib kelishi mumkin, masalan, jismoniy va ruhiy sog‘liqni yomonlashtirish, qaramlik, yurak kasalliklari, vazn yo‘qotish va xotira muammolari.

MDMA (Ekstazi)-MDMA bu sintetik modda bo‘lib, u energiya beruvchi va kayfiyatni ko‘taruvchi ta'sir ko‘rsatadi. MDMA ko‘pincha raqs va musiqa festivallarida ishlatiladi, ammo uning uzoq muddatli yoki ortiqcha ishlatilishi jiddiy sog‘liq muammolariga olib kelishi mumkin, jumladan psixoz, depressiya, yurak muammolari va boshqalar.

Sintetik narkotiklarning foydalari: Sintetik narkotiklar tibbiyotda ba'zi holatlarda foydali bo‘lishi mumkin. Ularning asosiy foydalari quyidagilardan iborat:

Og‘riqni samarali kamaytirish-Sintetik opioidlar, masalan, fentanil va metadon, og‘riqni tezda kamaytirish va bemorning holatini yaxshilashda samarali bo‘lib, ayniqsa yirik jarohatlar yoki operatsiyalar so‘ngida foydalidir.

Qaramlikni davolash-Sintetik opioidlar, ayniqsa metadon, opioid qaramlikni davolashda ishlatiladi. Bu modda bemorlarga qaramlikni bosqichma-bosqich kamaytirish imkoniyatini beradi.

Kayfiyatni yaxshilash-Sintetik stimulyatorlar va ba'zi psixoaktiv moddalar (masalan, MDMA) odamning kayfiyatini ko‘tarish, energiya berish va stressni kamaytirish uchun ishlatiladi. Ular ba'zi terapevtik maqsadlar uchun, masalan, depressiya yoki post-travmatik stress buzilishlarini davolashda ishlatiladi.

Sintetik narkotiklarning zararlari: Sintetik narkotiklar, faqat tibbiy maqsadlarda ishlatilganda foydali bo‘lsa-da, noto‘g‘ri yoki uzoq muddatda ishlatilganda jiddiy zararlar keltirishi mumkin. Ularning asosiy zararli ta'sirlari quyidagilar:

Qaramlik-Sintetik narkotiklar, ayniqsa sintetik opioidlar, juda tezda qaramlikni keltirib chiqarishi mumkin. Boshida bu moddalarning foydali ta'siri odamni xursand qilishi mumkin, ammo uzoq muddatda ular jismoniy va psixologik qaramlikni yuzaga keltiradi. Qaramlik insonning hayotini, ijtimoiy munosabatlarini va ish faoliyatini buzadi.

Narkotikning ortiqcha dozasi-Sintetik narkotiklarning ortiqcha dozasi, ayniqsa fentanil kabi kuchli moddalarning noto‘g‘ri ishlatilishi, o‘limga olib kelishi mumkin. Fentanil va uning analoglari juda kichik dozada ham halokatli bo‘lishi mumkin. Bu sintetik narkotiklarning noqonuniy savdosi va noto‘g‘ri ishlatilishi jiddiy xavf tug‘diradi.

Jismoniy va ruhiy sog‘liqning yomonlashishi-Sintetik narkotiklar uzoq muddatda ishlatilganda, ular jismoniy salomatlikni yomonlashtirishi, yurak va nafas olish tizimiga ta'sir qilishi, xotira va diqqatni jamlash qobiliyatini pasaytirishi mumkin. Shuningdek, ruhiy salomatlikka ham ta'sir qiladi, bu esa depressiya, xavotir, psixoz va boshqa psixiatrik kasalliklarning rivojlanishiga olib kelishi mumkin.

Qonuniy va ijtimoiy oqibatlar-Sintetik narkotiklar ko‘plab mamlakatlarda noqonuniy hisoblanadi. Ularni ishlab chiqarish, tarqatish va foydalanish jiddiy jinoiy oqibatlarga olib keladi. Noqonuniy foydalanish va savdolar jamiyatda jinoyatlarni keltirib chiqaradi va odamlar orasida xavfli giyohvandlik odatlarini rivojlantiradi.

Xulosa. Tabiiy va sintetik narkotiklar, tibbiyotda ba'zi foydali maqsadlar uchun ishlatilishi mumkin, lekin ular noto‘g‘ri ishlatilganda yoki uzoq muddatda foydalanilganda, ular jiddiy zararlar keltirib chiqarishi mumkin. Tabiiy narkotiklar, masalan, morfin va marixuana, og‘riqni kamaytirishda samarali bo‘lishi mumkin, lekin ular ham qaramlikni keltirib chiqaradi ko‘plab qabul qilganda. Sintetik narkotiklar, masalan, fentanil va metamfetamin, kuchli ta'sir ko‘rsatadi va og‘riqni

tezda kamaytirish mumkin, lekin ular juda xavfli bo‘lib, noto‘g‘ri ishlatilganda o‘limga olib kelishi mumkin. Narkotiklardan faqat shifokor nazorati ostida foydalanish zarur va ular bilan bog‘liq xavf-xatarlardan himoyalanish kerak. Ularning noto‘g‘ri ishlatilishi nafaqat sog‘liqni yomonlashtiradi, balki jamiyatda ijtimoiy muammolarni keltirib chiqaradi.

Tabiiy va sintetik narkotiklar ijobiy va salbiy tomonlarga ega. Ular og‘riqni kamaytirish, kayfiyatni yaxshilash, stressni kamaytirish va ba'zi ruhiy kasalliklarni davolashda samarali bo‘lishi mumkin. Biroq, ularning noto‘g‘ri ishlatilishi va qaramlikka olib kelishi jiddiy xavf tug‘diradi. Sintetik narkotiklar, ayniqsa fentanil, metamfetamin va MDMA kabi moddalardan foydalanish, nafaqat sog‘liqni yomonlashtiradi, balki jismoniy va ruhiy salomatlikni ham xavf ostiga qo‘yadi.

Tabiiy va sintetik narkotiklar ijobiy va salbiy tomonlarga ega bo‘lgan, kuchli ta'sir ko‘rsatadigan moddalardir. Ularning noto‘g‘ri ishlatilishi qaramlikka, jismoniy va ruhiy sog‘liqning yomonlashishiga olib keladi. Sintetik narkotiklar, ayniqsa fentanil, metamfetamin va MDMA kabi moddalar, xavfli va jiddiy oqibatlarga olib kelishi mumkin. Shu sababli, narkotiklar faqat tibbiy nazorat ostida va zarur hollarda ishlatilishi kerak. Ularning noto‘g‘ri ishlatilishining oldini olish, ijtimoiy va sog‘liqni saqlash tizimlari tomonidan samarali profilaktik tadbirlar ko‘rilishi kerak. Shuningdek, jamiyatda narkotiklarga qarshi kurashish va narkotiklar ishlatilishining xavf-xatarlarini tushuntirish muhimdir. Narkotiklar bilan bog‘liq xavf-xatarlar kamaytirilgan taqdirda, ularning foydalari, faqat nazoratli va to‘g‘ri ishlatilganda, tibbiyotda samarali vosita sifatida qolishi mumkinligi to‘g‘risida fikrimizni bildira olamiz.

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TAJRIBA XAYVONLARI TUXUMDONLAR XUSUSIY INNERVATSIYASINING MORFOLOGIK VA FUNKSIONAL TUZILISHI

Annotatsiya: *Tuxumdonlar innervatsiya tizimining morfologiyasi va uning innervatsiya manbalari masalasiga qo‘shimcha ma’lumotlar olishga qaratilgan izlanishlar o‘tkazildi. Tuxumdon faoliyatini tartibga soluvchi nerv mexanizmlarini aniqlash masalasi klinitsistlar uchun qiziqarli bo‘lib, bu garmon bezlarining distrofik holatlari bilan bog‘liq bo‘lib, ularning patogenezida nerv buzilishlari yotadi.*

Kalit so‘zlar: *tuxum hujayra, intramural nerv, tuxumdon, innervatsiya, retseptorlar, follikula, Valler degeneratsiyasi, o‘rama.*

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MORPHOLOGICAL AND FUNCTIONAL STRUCTURE OF THE SPECIAL INNERVATION OF THE OVARY IN EXPERIMENTAL ANIMALS

Abstract: *Research was conducted to obtain additional information on the morphology of the nervous system of the ovaries and its innervation sources. The issue of identifying the neural mechanisms regulating ovarian activity is of interest to clinicians, as it is associated with dystrophic conditions of the endocrine glands, where neural disorders play a role in their pathogenesis.*

Keywords: *oocyte, intramural nerve, ovary, innervation, receptors, follicle, Wallerian degeneration, wrapping.*

Mavzuning dolzarbligi. Nerv ta’sirlari tuxumdonning funksional va tuzilish holatini belgilaydi. Nerv apparatining yoshga bog‘liq rivojlanishi haqida ma’lumotlar mavjud: yangi tug‘ilgan chaqaloqlarda nerv tolalari umumiy miqdori kam va kichik yoshdagi bolalarda retseptorlarning soddaroq tuzilishi; tug‘ish yoshida retseptorlarning xilma-xilligi va tuxumdonlarning umumiy zich innervatsiyasi; menopauza davrida nerv tolalari umumiy miqdorining kamayishi. Afsuski, tuxumdon innervatsiyasi bo‘yicha mavjud bilimlar darajasida fiziologik tajribalar natijalari va morfologik tadqiqotlarni solishtirish hali imkonsiz. Bir xil retseptor tuzilmalari mavjud bo‘lsa-da, fiziologlar ko‘rsatgan tuxumdonning baro-, xemo-, mexano- va termoretseptsiyasiga mas’ul bo‘lganlarni ajratib ko‘rsatish

deyarli imkonsiz. Har qanday ichki sekretsiya bezini fiziologik o‘rganish har doim uning faoliyatini bevosita ro‘yxatga olish imkonsizligi bilan bog‘liq qiyinchiliklarga duch keladi.

Tadqiqot maqsadi va vazifalari. Tajriba hayvonlarida tuxumdonlarning intramural nerv o‘ramlarini o‘rganish.

Tadqiqot materiali va usullari. Tajriba hayvonlari sifatida mushuklar, itlar va quyonlar ishlatildi. Ikkala tuxumdon olib tashlanganidan so‘ng, hayvonlar operatsiyadan 10 kun o‘tib o‘ldirildi. Quyidagilar tadqiq qilindi: 1) ikki tomondan D5-S5 darajalaridagi orqa miya tugunlari, 2) quyosh va mezenterik o‘ramlarning tugunlari. Material Nissl usuli va gematoksilin bilan bo‘yaldi.

Tadqiqot natijalari. Quyosh o‘ramining yarim oy shaklidagi tugunlarini olib tashlash tajribalarida ko‘p miqdorda degeneratsiyaga uchragan miyelinli va miyelinsiz nerv tolalari aniqlandi. Valler degeneratsiyasi nerv tolalari va retseptorlarda kortikal va miya moddasida kuzatildi. Pastki va bel churra nervlari orqali orqa miya bilan L1-L2 bel segmentlari darajasida aloqa ta’minlanadi. Tajribalarimizda churra nervlarining kesilishi tuxumdonlarda miyelinli nerv tolalari va retseptorlarning tipik Valler degeneratsiyasi bilan kechdi: bunday tolalar kortikal va miya moddasida uchraydi. Aniqlangan degeneratsiyaga uchragan tolalar soni turlicha, ko‘pincha ko‘p bo‘ladi. Olingan preparatlarni tahlil qilganda, vagus nervi kesilganidan keyin hech qanday muddatlarda va hech bir holatda miyelinli nerv tolalari va retseptorlarning Valler degeneratsiyasi aniqlanmadi. Odatda, intraorgan nerv apparatining barcha elementlari buzilmagan ko‘rinishda edi, faqat alohida argirofil tolalar bundan mustasno (bunday tolalar har doim nazorat tuxumdonlarida ham mavjud). Tuxumdonda nerv tolalarining tipik Valler degeneratsiyasi kuzatildi. Eng ko‘p degeneratsiyaga uchragan tolalar D10-L3 sezgir tugunlari olib tashlanganda aniqlandi. Ehtimol, bu orqa miya tugunlari tuxumdonga sezgir nerv tolalarining asosiy manbai hisoblanadi. Degeneratsiyaga uchragan nerv tolalari kortikal va miya moddasining biriktiruvchi to‘qima asosida, rivojlanayotgan follikullar va Graaf pufakchalari atrofida, atreziya follikullarida aniqlandi. Qalin miyelinli tolalar va uning atrofida va qisman atreziya follikulasi ichiga kiruvchi nozikroq tarmoqlarining degeneratsiyasi aniqlandi, bu tajribalar embriologik tadqiqotlar ma’lumotlarini tasdiqladi. Embriogenezda o‘rnatilgan aloqalar, tuxumdonning kaudal yo‘nalishda siljishiga qaramay, kattalar organizmida saqlanib qoladi. Aksonlari kesilgan neyronlarda retrogad o‘zgarishlarning majburiy ravishda paydo bo‘lishiga asoslanib, tuxumdonlarni olib tashlash tajribalari o‘tkazildi. Bu usul nafaqat tuxumdonlarni olib tashlash tajribalarida aksonlari kesilgan neyronlarning joylashuvini aniqlashga, balki tuxumdon innervatsiyasida turli nerv tizimi bo‘limlarining ishtirok darajasini miqdoriy jihatdan xarakterlashga imkon beradi.

Orqa miya tugunlarini tadqiq qilish retrogad degeneratsiya ko‘rinishidagi (yadro ektopiyasi, tigroliz va boshqalar) kichik hujayra guruhlarini aniqladi. Bu guruhlar pastki ko‘krak va yuqori bel segmentlari darajasidagi orqa miya tugunlarida biroz tez-tez uchraydi va yuqori ko‘krak segmentlarida deyarli aniqlanmaydi, faqat juda kam hollarda alohida hujayralar degeneratsiya

bosqichlarida uchraydi. Pastki ko‘krak va yuqori bel orqa miya tugunlarining tuxumdon innervatsiyasida ishtirok etishi to‘g‘risidagi ijobiy ma’lumotlarga ega bo‘lib, biz ushbu tajribalarda olingan natijalar, ya’ni faqat kichik hujayra guruhlari zararlanganligi bilan biroz hayron bo‘ldik. Bu faktning tushuntirilishi aniq: sezgir hujayralar, tuxumdon innervatsiyasida ishtirok etuvchi orqa miya tugunlari, boshqa organlarga ham ko‘plab kollaterallar beradi. Kichik organning o‘chirilishi, shubhasiz, ularning holatiga ta’sir qiladi, lekin bu tuzilishda sezilarli darajada ifodalangan reaksiyada namoyon bo‘lmaydi. Ehtimol, tuxumdonga o‘z tolalarini yuboradigan orqa miya tugunlarining hujayralari ancha keng guruhni tashkil qiladi. Quyosh o‘ramida retrogad o‘zgarishlarga uchragan hujayra guruhlari ancha kattaroq edi. Jarayon bir yadroli va ikki yadroli hujayralarga ta’sir qildi. Pastki mezenterik o‘ramda bu guruhlar ancha kichikroq bo‘lib, ba’zida faqat alohida hujayralar o‘zgarishlarga duchor bo‘ldi. Shunday qilib, retrogad degeneratsiya usulidan foydalanib, biz tuxumdon innervatsiya manbalari to‘g‘risida avvalroq aniqlangan natijalarni to‘g‘ridan-to‘g‘ri tasdiqlovchi ma’lumotlarni oldik, bu ma’lumotlar nerv tizimining muayyan elementlarini olib tashlash orqali tuxumdon nerv apparatini o‘rganish yo‘li bilan olingan edi.

Xulosalar. Olingan ma’lumotlar tuxumdon nerv apparatining manbalari va tizimiy mansubligi to‘g‘risidagi tasavvurlarni quyidagicha umumlashtirishga imkon beradi: tuxumdon uchun sezgir nerv tolalarining asosiy manbai D10-L3 segmentlaridagi orqa miya sezgir tugunlari hisoblanadi. Ushbu darajalardan yuqori va pastda orqa miya tugunlaridan tuxumdonga juda oz miqdordagi tolalar yuboriladi. Quyosh o‘ramasi tuxumdon uchun qon tomir harakatlantiruvchi tolalarni beruvchi hujayra elementlarining asosiy massasini o‘z ichiga oladi. Bu o‘rama orqali katta churra nervi tarkibida orqa miya tugunlaridan kelib chiqadigan sezgir nerv tolalari tuxumdonga o‘tadi. Pastki mezenterik o‘rama tuxumdon uchun qon tomir harakatlantiruvchi tolalarning ikkinchi darajali manbai hisoblanadi. Innervatsiya manbalarining ko‘pligi - nerv tizimining kompensator mexanizmlari bo‘lib, tuxumdon funksiyasining yanada mukammal nerv tartibga solinishiga yordam beradi.

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BUDJET TIZIMIDA DEBITORLIK QARZLARI VA AUDITINING O‘ZIGA XOS XUSUSIYATLARI

Annotatsiya. *Mazkur maqolada budjet tizimida debitorlik qarzlarining shakllanishi, ularni boshqarish mexanizmlari hamda audit jarayonining o‘ziga xos xususiyatlari tahlil qilinadi. Debitorlik qarzlarining samarali boshqaruvi davlat byudjeti mablag‘laridan oqilona foydalanishni ta’minlaydi. Shuningdek, maqolada audit jarayonida uchraydigan muammolar va ularni bartaraf etish yo‘llari ham ko‘rib chiqiladi.*

Kalit so‘zlar: *debitorlik qarzlari, budjet tizimi, audit, moliyaviy nazorat, byudjet tashkilotlari.*

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SPECIFIC FEATURES OF ACCOUNTS RECEIVABLE AND AUDITING IN THE BUDGET SYSTEM

Abstract. *This article analyzes the formation of accounts receivable in the budget system, management mechanisms, and the specific features of auditing in this area. Effective management of accounts receivable ensures the rational use of public budget funds. The paper also explores common issues encountered during audits and suggests ways to address them.*

Keywords: *accounts receivable, budget system, audit, financial control, budgetary institutions.*

Kirish

Bugungi globallashuv sharoitida mamlakatimizda barcha sohalarda qator islohotlar amalga oshirilmoqda. Har bir sohada bugungi shiddat bilan rivoj topib borayotgan integratsiyalashuv jarayonida sifatli va raqobatbardosh tizim yaratish bo‘yicha amaliy ishlar davom etib kelmoqda.

Mamlakatimda amalga oshirilayotgan moliyaviy islohotlarning yangi bosqichida milliy moliya tizimini mazmun-mohiyati va samaradorligi jihatidan davr talabiga mos ravishda rivojlantirish, mamlakatimiz iqtisodiyotining raqobatbardoshligini oshirish va makroiqtisodiy barqarorlikni mustahkamlash zarur. Mahalliy byudjetlar - bu mahalliy hokimiyat organlariga o'z ishlarini bajarish

uchun beriladigan moliyaviy yordam va ularning moliyaviy erkinligi mahalliy rivojlanishga bevosita ta'sir qiladi.

Hududlarni rivojlantirish borasida fikr yurita turib, O‘zbekiston Respublikasi Prezidenti SH.M.Mirziyoyev aytganidek: “Mahalliy budjetlar mintaqa iqtisodiyotini va barqaror rivojlanishni qo‘llab-quvvatlash uchun yetarli emas”. (Sh. Mirziyoyev, 2017)

Budjet - bu harakatlar rejalari, ustuvor hisobotlar, moliyaviy rejalashtirish strategiyalari, ma'muriy va huquqiy protseduralarning yaxlit to‘plami. Muhokama uchun asos sifatida moliya menejmenti tanlandi, chunki u davlat va xususiy moliyaning barcha jabhalarini qamrab oladi. (Ibragimov A.K., Sugirbaev B.B. 2009)

Shuni yodda tutish kerakki, har qanday moliyaviy tizimning ishlashi o‘zgarish, vaqt va joy ta’sir qiladi. Bu jarayon har doim budjet siyosati, budjetlashtirish modellari va moliyaviy rejalashtirishdagi o‘zgarishlarga olib keladi.

Ushbu dissertatsiyada mamlakat budjetining makroiqtisodiy sharoitlari, hisoblangan daromadlar va haqiqiy xarajatlarning daromadlari natijalari, mahalliy budjetlarning ta’siri, yangi byudjet tuzish va ijro etish usullari hamda moliyaviy ma’lumotlarning yetarli emasligi ko‘rsatilgan.

Davlat budjetidan foydalanish uchun foydali ijtimoiy loyihalarni amalga oshirish uchun mahalliy mablag‘larni chiqarish, daromadlarni mustahkamlash, qo‘shimcha resurslarni aniqlash va jalb qilish bo‘yicha ko‘rilayotgan chora-tadbirlar ko‘rib chiqiladi. Mintaqadagi mavjud resurslar, mavjud muammolar va dolzarb mintaqaviy sharoitlardan kelib chiqib, biz mamlakatning asosiy makroiqtisodiy ko‘rsatkichlari hamda kelgusi yil uchun daromadlar va budjet prognozlarini o‘rganamiz.(O‘zbekistonning taraqqiyot strategiyasi, 2022)

Budjetlashtirish - bu mamlakat xarajatlarini budjetlashtirishga aytiladi. Budjet tuzish Respublika budjetining ijrosi bilan bog‘liq barcha tadbirlarni o‘z ichiga oladi va budjetning ijro etilishi vaqtidagi holatini tavsiflaydi. Buxgalteriya hisobi mamlakat iqtisodiyotining turli qismlari va davlat budjeti o‘rtasidagi munosabatlarga ta’sir qiladi. Buxgalteriya hisobi yordamida budjet, budjetning daromadlari va xarajatlari, hisobvaraqdagi pullar, budjetni ijro etish jarayonida hosil bo‘lgan pul mablag‘lari va jamg‘armalari, shuningdek, budjet tashkilotining mablag‘lari bank hisobvaraqlarida aks ettiriladi. Daromadlar, xarajatlar va pullar va ularning moliya tizimidagi o‘zgarishlari va moliya institutlarining aktivlari moliya tizimining bevosita mahsulotidir. (Haydarov M., A. Suvonqulov, B. Sugirbaev, B. Nurmatov, 2010)

Adabiyotlar sharhi

Budjet tizimidagi debitorlik qarzlari va ularning auditi masalalari bo‘yicha so‘nggi yillarda bir qator ilmiy tadqiqotlar olib borilgan. Jumladan, O‘zbekiston Respublikasi Moliya vazirligi, Hisob palatasi va Davlat moliyaviy nazorati organlarining nashrlari, shuningdek, iqtisodiy fanlar doktorlari tomonidan yozilgan maqola va darsliklarda bu mavzuga chuqur yondashuvlar mavjud.

Xususan, A.X. Raximovning "Davlat moliyasini boshqarish" nomli asarida budjet mablag‘larining boshqaruvi va ularning samaradorligi haqida keng

ma’lumotlar keltirilgan. Shuningdek, M.Q. Jo‘rayevning "Moliyaviy audit asoslari" nomli o‘quv qo‘llanmasida auditning nazariy va amaliy jihatlari yoritilgan.

O‘zbekiston Respublikasi Prezidentining qaror va farmonlari, Moliya vazirligi tomonidan tasdiqlangan budjet kodeksi va boshqa me’yoriy hujjatlar esa ushbu mavzuning huquqiy asosini tashkil etadi. Ushbu manbalar debitorlik qarzlarining vujudga kelish sabablari, ularni bartaraf etish mexanizmlari va audit orqali moliyaviy nazoratni amalga oshirish tartibi haqida muhim bilimlar beradi.

Tadqiqot metodologiyasi

Ushbu ilmiy maqolani yozishda tizimli yondashuv asosida tahlil va baholash usullaridan foydalanildi. Tadqiqotning maqsadi — budjet tizimida debitorlik qarzlarining shakllanishi, ularni boshqarish amaliyoti va audit jarayonining o‘ziga xos xususiyatlarini aniqlash hamda takomillashtirish bo‘yicha tavsiyalar ishlab chiqishdan iborat. Tadqiqotda quyidagi metodlardan foydalanildi: tahliliy (analitik) metod, solishtirma (komparativ) tahlil, me’yoriy-huquqiy tahlil, deskriptiv yondashuv, tavsiyalar ishlab chiqish.

Tahlil va natijalar muhokamasi

Budjet faoliyatni iqtisodiy tahlil qilish jarayonida doimiy ravishda ko‘rsatkichlar tizimi bilan shug'ullanish kerak.

Soliqni bosqichma-bosqich kamaytirish yoki byudjetdan moliyalashtirishni tejamkorlik asosida qisqartirish ham ko‘p vaqt talab etadi.

Bu vazifalarning amalga oshirilishi mamlakatda iqtisodiy barqarorlikni ta’minlashga va shu orqali aholining ijtimoiy farovonligini oshirishga xizmat qiladi. Buning uchun nafaqat soliq to‘lovlari va budjet xarajatlarini kamaytirish, balki bozor talabi asosida davlat budjetidan moliyalashtiriladigan budjet tashkilotlarida budjetdan tashqari jamg‘armalarni tashkil etish ham muhim ahamiyatga ega. Budjet tashkilotlarining budjetdan tashqari mablag‘ini shakllanishi budjet tashkilotlarini byudjetdan moliyalashtirishni qisqartirishga yordam beradi.

Ijtimoiy sohada faoliyat yurituvchi budjet tashkilotlari boshqa sohalarga nisbatan byudjet mablag'larini shakllantirishda ko'proq imkoniyatlarga ega. Xususan, xizmat, ish va mahsulot bozorlari bilan raqobatlashish imkoniyatlari mavjud. Mazkur budjet tashkilotlarida budjetdan tashqari jamg‘armalarning shakllantirilishi, shu bilan birga, ijtimoiy sohani qo‘shimcha budget mablag‘i yordamida ta’minlash va ushbu maqsadlarga yo‘naltiriladigan davlat budjeti mablag‘larini sezilarli darajada kamaytirish imkonini beradi.

Oliy ta’lim va sog‘liqni saqlashni moliyalashtirish uchun budjetdan tashqari mablag‘ning ulushini nisbatan yuqori, umumiy o‘rta ta’lim muassasalarida esa bu ko‘rsatkichlar nisbatan past.

Budjet tashkilotlarining ta’lim va boshqa faoliyat olib borgan moliyaviy faoliyat to‘g‘risidagi hisobot shakli orqali belgilanadi, lekin bu shakl hech kimga taqdim etilmaydi.

Tadbirkorlik sub’ektlari esa har chorakda o'z faoliyatining moliyaviy natija to‘g‘risida hisobot beradi va soliq organlariga taqdim etadi. Bundan tashqari, soliq organlari ushbu faoliyat uchun soliq imtiyozlariga ega bo‘lsa-da, soliq deklaratsiyasi soliq organlariga taqdim etilmaydi. Natijada budjet daromadlari va

soliq imtiyozlari summalari to‘g‘risida tizimli ma’lumot olishning imkoni bo‘lmaydi.

Budjet tasdiqlangandan so‘ng davlat va mahalliy soliqlar va daromadlar to‘g‘risidagi yangi qonunlarni amalga oshirish, ma’muriy idoralarni taqsimlashda o‘zgartirishlar, korxonalar, tashkilotlar va tijorat tashkilotlari o‘rtasidagi hamkorlik, qurilish materiallarini turli tashkilotlar bilan qayta taqsimlash, cheklangan resurslarni davlat tomonidan qayta taqsimlashga olib keladi. O‘zbekiston Respublikasi, O‘zbekiston Byudjetni to‘ldirish jarayonida yuzaga kelgan qarzlar budjet O‘zbekiston Prezidentining normativ hujjatlari va budjetga muvofiq alohida qabul qilingan tuzatishlar asosida hisoblab chiqiladi.

2-jadval

Budjet tashkilotlaridan budjetdan tashqari pul oqimlari hisobidagi o‘zgarishlar

T/r	Maqsad va vazifasi	Buxgalteriya hisobi		Manba hujjati
		Debitorlik	Kreditorlik	
Daromadlarni hisobga olishga ko‘ra				
1	Budjetdan tashqari budjet mablag‘lari daromadlarini hisobga olish tashkilotlar	Budjet tashkilotlarining debitorlik qarzlari turli xil hisob-kitoblar	Tashkilot budjetidan daromadlar qo‘shimcha grantlar hisobidan keladi	Shaxsiy g'azna hisobidan ko'chirma
Moliyaviy daromad				
1	Byudjetdan tashqari mablag'larning tushumi budjet tashkilotlari	Budjet tashkilotlarining turli schyotlar bo‘yicha debitorlik qarzlari	Budjet tashkilotlarining turli schyotlar bo‘yicha debitorlik qarzlari	Shaxsiy g'azna hisobidan ko'chirma
Moliyaviy xarajatlarni aks ettirish				
1	Budjetdan tashqari fondlarning real xarajatlari	Hisoblangan haqiqiy xarajatlar	Budjet tashkilotlarining kreditlari	Hisob-fakturalar, konsignatsiyalar
Moliyaviy xarajatlarni to'lash				
1	Byudjetdan tashqari fonddan kelib chiqadigan moliyaviy xarajatkarni to'lash	Byudjet tashkilotlarining kreditlari	Tashkilot budjetidan daromadlar qo‘shimcha grantlar orqali	Shaxsiy g'azna hisobidan ko'chirma

Manba:Tadqiqotlar davomida muallif tomonidan tuzilgan.

Markaziy fiskal transfert deganda ma’lum yoki noma’lum maqsadda bir budjetdan boshqasiga pul o‘tkazish tushuniladi va mahalliy daromadlarni shakllantirish uchun juda muhimdir. Shuning uchun valyuta kursi budjetining maqsadi mahalliy budjet balansini ta’minlashdan iborat bo‘lib, bu moliyaviy nazoratning asosiy maqsadi hisoblanadi.

3-jadval

Debitorlik va kreditorlik qarzlar to‘g‘risidagi pul mablag‘larining moliyaviy va boshqa ma’lumotlarni ko‘rsatadigan muvofiqlik jadvali

T/R	Hisobot ko‘rsatkichlari	Hisob registrlari va boshqa hujjatlar ko‘rsatkichlari		
1.	Debitor qarzdorlik	292-shakl kitobi va boshqa turdagi hisobot ko‘rsatkichlari	Bosh daftardagi tegishli subschyotlar ma‘lumotlari	**Tegishli solishtirsh dalolatnomalari ma‘lumotlari**
2.	**Kreditorlik qarzdorlik**	**292-shakl kitobi va boshqa turdagi hisobot ko‘rsatkichlari**	**Bosh daftardagi tegishli subschyotlar ma‘lumotlari**	**Tegishli solishtirsh dalolatnomalari ma‘lumotlari**

Manba: Buxgalteriya ma’lumotlari asosida tayyorlangan.

Moliyaviy tashkilotning moliyaviy ma’lumotlarining to‘g‘riligini tekshirishda quyidagi jadvallarni alohida ko‘rib chiqiladi:

Balans (1-jadval). Balansni tuzishdan oldin barcha mavjud shartnomalar dastlabki ma’lumotlarga ko‘ra tuziladi va “Umumiy jurnal” (308-shakl) ga kiritiladi, har bir o‘zgarish oyi hisobot davrining pastki va oxirgi oyi ekanligini tekshiriladi. “Umumiy jurnal” (308-shakl) bo‘yicha hisoblanadi.

Auditor, birinchi navbatda, ichki nazorat tizimi holatiga baho berishi lozim. Buning asosida u auditorlik dasturini tayyorlaydi. Turli debitorlar hamda kreditorlar bilan hisob varag‘i tekshirishda quyidagilar ko‘rib chiqiladi:

1. Tekshirilayotgan budjet korxona nomi_____
2. Audit davri_____
3. Kishi-soat miqdori_____
4. Auditorlik guruhi rahbari_____
5. Auditorlik guruhi tarkibi_____
6. Rejalashtirilayotgan auditorlik xavfi_____
7. Rejalashtirilayotgan auditorlik darajasi_____

Turli debitor va kreditorlik bilan hisob-kitoblarni tekshirishda quyidagilarga aniqlash lozim:

1. Kontrakt va xo‘jalik shartnomalar to‘g‘ri rasmiylashtirilganligini baholash unda xo‘jalik shartnomalari, kontraktlar ko‘rib chiqiladi.
2. Debitor bilan hisobi bo‘yicha hisob registrlari ko‘rsatkichlari Bosh kitob ko‘rsatkichlari bilan solishtirish unda Jurnal-orderlar, Bosh kitoblar ko‘rib chiqiladi.
3. Turli debitor va kreditor bilan hisob varag‘i bo‘yicha inventarizatsiya natijalari hamda qarzlar summasi tasdiqlanganligini tekshirish unda hisob-kitoblar bo‘yicha inventarizatsiya dalolatnomalari, o‘zoro solishtirma dalolatnomalari, xo‘jalik-shartnomalari, jurnal-orderlar ko‘rib chiqiladi.

Xo‘jalik yurituvchi subyektlarida debitor va kreditorlar bilan hisoblashuvlar hisobini yaxshilash yo‘llari quyidagilardan iborat:

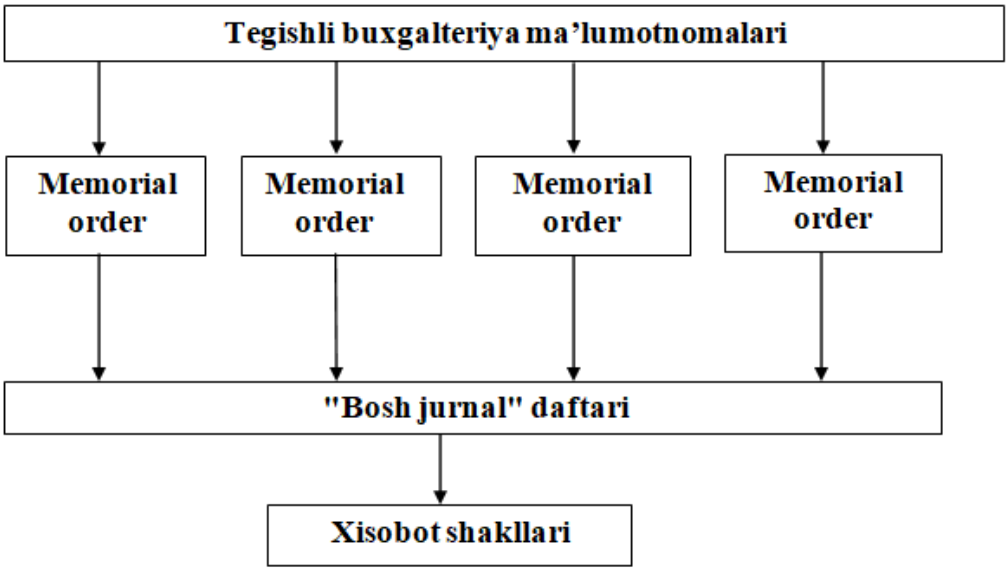
- debitor va kreditorlar bilan hisoblash jarayonini tashkil etishda majburiyatlarni o‘z vaqtida tugatilishi bo‘yicha buxgalteriya bo‘limlarida monitoringini yuritib borish; - debitor va kreditorlar bilan hisoblashuvlar hisobini yuritishda mablag‘lari bo‘yicha yuzaga kelishini alohida buxgalteriya schotlarida aks ettirish, ya’ni ishchi schotlar rejasida aniq belgilanib olishi;

- debitor yoki kreditor bilan hisoblashuvi hisobini amaldagi qonunchilik talablari darajasida tashkil etish va muddati o‘tgan holatlarga kelishini oldini olish bo‘yicha chora-tadbirlarni amalga oshirib borish;

- debitor va kreditorlar bilan hisoblashuvlar hisobini o‘z vaqtida buxgalteriya hujjatlarida to‘g‘ri aks ettirish bo‘yicha hisob siyosatini belgilab olish.

Tekshirish davomida debitor va kreditor qarzlarni hisobga oluvchi subschyotlarda debitorlar va kreditorlar summalari o‘zaro hisobga olmaganligi aniqlanadi. Mavjud debitorlar balansning aktiv qismida, kreditorlik qarz esa, passiv qismida ko‘rsatilishi kerak.

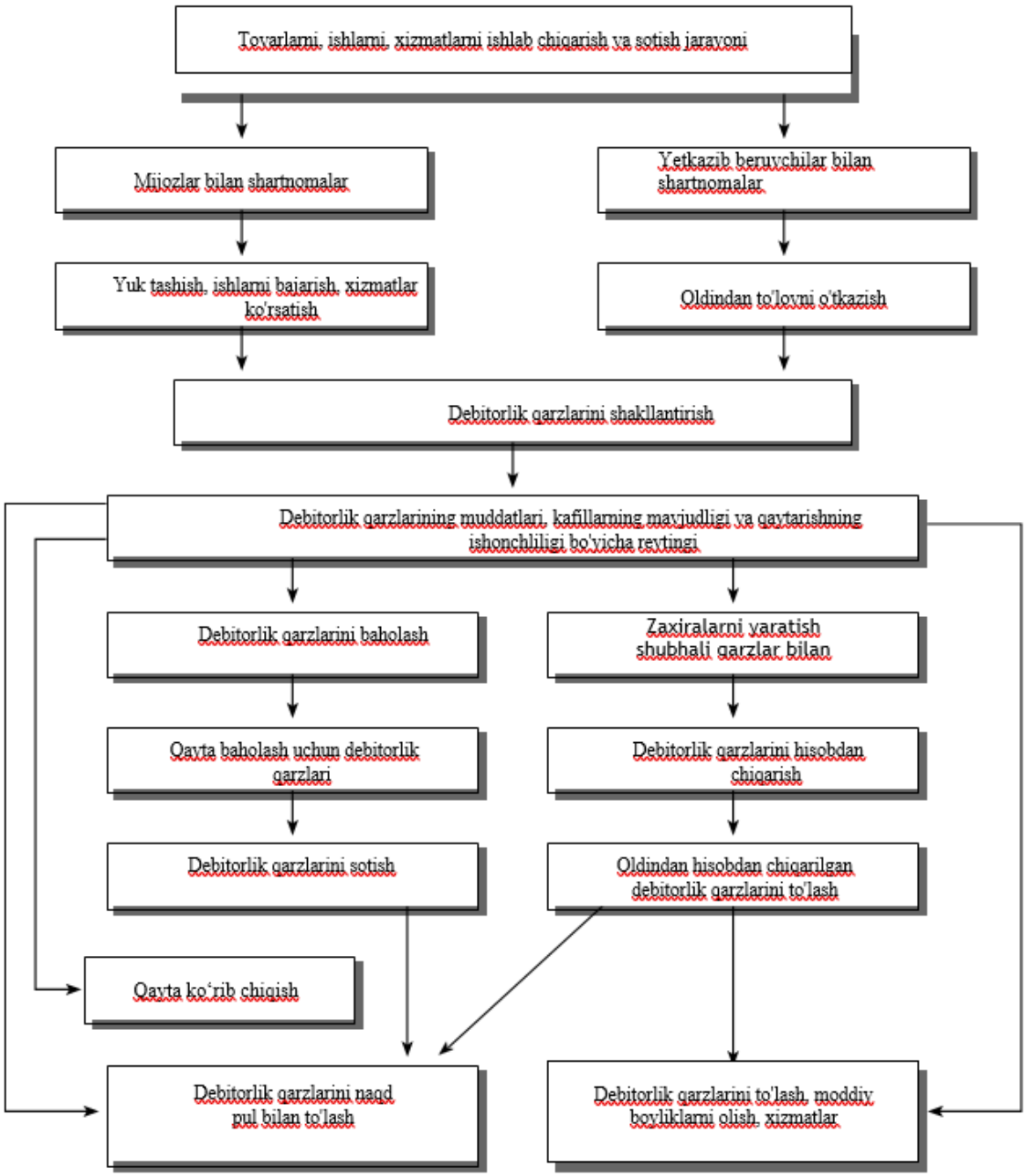
Debitorlik qarzlarini tekshirishda aniqlangan eng tipik xatolar mahsulot yetkazib berish bo'yicha shartnomalarning, birlamchi hisob-kitob va to'lov hujjatlarining yo'qligi yoki ularning to'liq bajarilmaganligidir; noto'g'ri ish yuritish; shartnomalar bo'yicha da'volarni noto'g'ri rasmiylashtirish va taqdim etish Shunday qilib, debitorlik qarzlarini tekshirishga kirishishdan oldin auditning asosiy maqsad va vazifalarini aniqlash, shuningdek, debitorlik qarzlarini hisobga olishda qanday qoidalarga rioya qilish kerakligini aniqlash kerak. audit jarayonida tahlil qilinishi kerak bo'lgan asosiy hujjatlar ro'yxatini aniqlash.



Manba: Buxgalteriya ma'lumotlari asosida tayyorlangan.

1-rasm. Budjet ijrosi natijalarini buxgalteriya hujjatlarida aks ettirishning sxematik ko‘rinishi

Zamonaviy sharoitda debitorlik qarzlarini boshqarish samaradorligini oshirish vositalaridan biri bu har xil turdagi xo'jalik shartnomalaridan foydalanish, shartnomalarga soliq yukini tartibga solish bo'yicha optimallashtirish qarorlarini ta'minlaydigan shartlarni kiritishdir. Natijada, umumiy mulkdorlar tomonidan birlashtirilgan, ustav kapitalida o'zaro ishtirok etadigan, shartnoma munosabatlari bilan bog'liq bo'lgan yoki fuqarolik qonunchiligi normalariga muvofiq xolding tashkil etuvchi o'zaro bog'langan savdo kompaniyalari guruhlari tuziladi.



2-rasm. Debitorlik qarzlarining hayot aylanishi

O‘zbekiston Respublikasi budjet tizimida debitorlik qarzlarining mavjudligi moliyaviy intizomning buzilishi, byudjet mablag‘laridan samarasiz foydalanish va moliyaviy oqimlarning kechikishiga olib kelmoqda. Tahlillar shuni ko‘rsatadiki, ko‘plab budjet tashkilotlarida debitorlik qarzlari vaqtida undirilmaydi, bu esa ularning moliyaviy holatini zaiflashtiradi. Audit jarayonlari orqali debitorlik qarzlarining shakllanishi, ularni tasdiqlovchi hujjatlar va hisob yuritish tartibi o‘rganiladi. Ko‘pgina holatlarda aniqlangan kamchiliklar – noto‘g‘ri hujjatlashtirish, huquqiy asosning yetishmasligi yoki ichki nazoratning sustligi bilan bog‘liq.

Xulosa va takliflar

Budjet tizimidagi debitorlik qarzlarini samarali boshqarish va ularni audit qilish orqali davlat moliyaviy resurslaridan oqilona foydalanish imkoniyati oshadi. Tahlillar shuni ko‘rsatadiki, ichki nazoratni kuchaytirish, hujjatlarni to‘g‘ri yuritish va muntazam audit o‘tkazish orqali mavjud muammolarni bartaraf etish mumkin. Ushbu yo‘nalishda aniqlik va shaffoflikni ta’minlash — asosiy ustuvor vazifalardan biridir.

Debitorlik auditi tekshirishning ichki standartini ishlab chiqish zamonaviy biznesning muhim bosqichidir. Shu nuqtai nazardan, debitorlik va kreditorlik qarzlarini tekshirishning ichki standarti biznes jarayonlarini tartibga solish va ichki nazorat tizimlari samaradorligini oshirish uchun zarur vositadir. Debitorlik auditini tahlil qilish ushbu ish olib kelishi mumkin bo‘lgan qiyinchiliklarni aniqlash uchun ham, tashkilotning moliyaviy faoliyatini optimallashtirish uchun ham muhimdir. Shuni ta’kidlash kerakki, qarzni muntazam tahlil qilish va boshqarish budjet tashkilot boshqaruvining barcha darajalarida amalga oshirilishi kerak.

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BADIIY GIMNASTIKADA MURABBIY VA SPORTCHI O‘RTASIDAGI KOMMUNIKATSIYA

Annotatsiya: *Ushbu maqolada badiiy gimnastika doirasida murabbiy va sportchi o‘rtasidagi kommunikatsiya turlarini, omillarini, muammolarini va ularni yaxshilash yo‘llarini ilmiy asosda tahlil qilamiz. Shuningdek, amaliy tajribalarga asoslangan holda samarali kommunikatsiya usullari tavsifi ham berildi. Kommunikatsiya insonlar o‘rtasida axborot almashish, fikr bildirish va his-tuyg‘ularni ifoda etish jarayonidir. Sportda bu jarayon ayniqsa murabbiy va sportchi o‘rtasida yuqori ahamiyat kasb etadi. Quyida ushbu jarayonning asosiy turlari ko‘rib chiqildi.*

Kalit so‘zlar: *badiiy gimnastika, kommunikatsiya, murabbiy va sportchi munosabatlari, og‘zaki muloqot, noverbal muloqot, sport psixologiyasi, motivatsiya, emotsional aloqalar, yosh sportchilar, pedagogik yondashuv, musobaqaga tayyorgarlik, faol tinglash, individual yondashuv, ishonchli muhit, sportda tanqid.*

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COMMUNICATION BETWEEN COACH AND ATHLETE IN RHYTHMIC GYMNASTICS

Abstract: *This article provides a scientific analysis of the types, factors, and challenges of communication between coach and athlete in the field of rhythmic gymnastics, along with strategies for its improvement. It also describes effective communication methods based on practical experiences. Communication is the process of exchanging information, expressing opinions, and conveying emotions between individuals. In sports, this process is especially crucial in the relationship*

between coach and athlete. The article discusses the main types of communication involved in this process.

Keywords: *rhythmic gymnastics, communication, coach-athlete relationship, verbal communication, nonverbal communication, sports psychology, motivation, emotional connection, young athletes, pedagogical approach, competition preparation, active listening, individual approach, trustful environment, criticism in sports.*

Badiiy gimnastika yuqori darajada aniqlik, estetik ifoda, muvofiqlik va jismoniy tayyorgarlikni talab qiluvchi sport turi hisoblanadi. Bu sport turida muvaffaqiyatli natijalarga erishishda murabbiy va sportchi o‘rtasidagi samarali kommunikatsiya muhim rol o‘ynaydi. Kommunikatsiya bu faqatgina og‘zaki so‘zlashuv emas, balki harakatlar, tana tili, emotsional aloqalar va ishonchga asoslangan murakkab jarayondir.

Og‘zaki muloqot — eng keng tarqalgan va tezkor aloqadir. Murabbiy sportchiga mashqni qanday bajarishni, qanday tuzatishlar kiritish kerakligini og‘zaki tushuntiradi. Bu muloqot motivatsiya berish, ogohlantirish, maqtash, tanqid qilish kabi ko‘rinishlarda bo‘ladi. Ammo, agar murabbiy noto‘g‘ri ohangda gapirsa yoki sportchining hissiy holatini inobatga olmasa, bu salbiy oqibatlarga olib kelishi mumkin.

Noverbal kommunikatsiya noverbal aloqaga imo-ishoralar, tana tili, yuz ifodalari kiradi. Badiiy gimnastikada harakatlar estetikasi muhim bo‘lganligi sababli, murabbiy ko‘pincha o‘zi mashqni ko‘rsatib beradi. Yuz ifodasi, tana holati orqali sportchining holatini sezish, unga mos yondashish noverbal muloqotning ahamiyatini oshiradi.

Emotsional kommunikatsiya emotsional aloqalar — sportchi o‘zini qo‘llab-quvvatlangan, tushunilgan va qadrlangan his qiladigan muloqot shaklidir. Bu sportchining ishonchini oshiradi, ruhiy tayyorgarligini mustahkamlaydi. Ayniqsa, musobaqa oldidan va murakkab mashqlarni o‘zlashtirish davrida murabbiy sportchining holatini tushunib, emotsional yordam ko‘rsatishi muhimdir.

Bir tomonlama va ikki tomonlama kommunikatsiya, bir tomonlama muloqotda faqat murabbiy buyruq beradi, sportchi esa uni bajaradi. Ikki tomonlama kommunikatsiya esa sportchining fikri, his-tuyg‘ulari, savollarini inobatga olish orqali yuzaga keladi. Bu sportchining ishtirokini oshiradi, muloqotni shaffof va samarali qiladi.

Ko‘pgina gimnastikachilar mashg‘ulotlarga 4–6 yoshda kirishadi. Ularning psixikasi hali to‘liq shakllanmagan, hissiyotlarga beriluvchan bo‘ladi. Shuning uchun murabbiy bolalarni tanqid qilishda ehtiyotkor bo‘lishi, ularga ijobiy motivatsiya berishga intilishi kerak. Yoshga mos pedagogik yondashuv kommunikatsiyaning asosiy omilidir.

Estetik ifoda va artistiklik, badiiy gimnastikada texnik bajaruv bilan bir qatorda sahnadagi emotsional ifoda ham baholanadi. Murabbiy sportchidan o‘z harakatlarida dramatizm, energiya va go‘zallikni ifoda etishni talab qiladi. Bu esa murabbiy va sportchi o‘rtasida hissiy va emotsional uyg‘unlikni talab qiladi.

Musobaqa oldi va musobaqa paytidagi kommunikatsiya, musobaqa — sportchida kuchli stress uyg‘otuvchi jarayon. Bu vaqtda murabbiy sportchiga ijobiy energiya berishi, unga ishonch bilan qarashi kerak. Ovozning ohangi, tana harakati, oddiy so‘zlar — bularning barchasi sportchining holatiga kuchli ta’sir qiladi. Musobaqa vaqtida qisqa, aniq va ijobiy muloqot muhim ahamiyatga ega.

Murabbiy sportchini chin dildan tinglashi, uning fikrlarini inobatga olishi — bu o‘zaro hurmatning ifodasi. Faol tinglash orqali sportchi o‘z fikrini erkin ifoda etadi, o‘zini qadrlangan his qiladi.

Ijobiy fikrlash va motivatsiya, sportchilarning o‘ziga ishonchini oshirishda maqtov, rag‘batlantirish, xatolarni konstruktiv tarzda muhokama qilish samarali hisoblanadi. Salbiy tanqid o‘rniga, kelgusida qanday yaxshilanish mumkinligi haqida gapirish foydali bo‘ladi.

Individual yondashuv, har bir sportchining xarakteri, hissiyati, o‘rganish sur’ati turlicha. Shuning uchun kommunikatsiya ham shaxsiy xususiyatlarga moslashtirilishi kerak. Masalan, ba’zi sportchilarni yumshoq tarzda rag‘batlantirish kerak bo‘lsa, boshqalariga aniq vazifalar qo‘yish foydali bo‘ladi.

Vizual ko‘rsatmalar, badiiy gimnastikada harakatlar aniqligi muhim. Murabbiy tomonidan mashqlarni bajarib ko‘rsatish, videolavhalar orqali tahlil qilish, sportchining o‘z harakatlarini ko‘rib chiqishi — bular barchasi tushunishni osonlashtiradi.

Ishonchli muhit yaratish, o‘zaro ishonch va hurmatga asoslangan muhitda sportchi xatolaridan qo‘rqmaydi, o‘z fikrini erkin bildiradi. Bu esa uning shaxsiy va sportiy rivojlanishiga ijobiy ta’sir ko‘rsatadi.

Kommunikatsiyada uchraydigan muammolar

Noto‘g‘ri tushunish, ba’zida murabbiy tomonidan berilgan ko‘rsatmalar sportchi tomonidan noto‘g‘ri tushuniladi. Bu mashqni noto‘g‘ri bajarishga olib keladi. Bunday vaziyatlarni oldini olish uchun savollar berish, fikrni qayta tasdiqlash lozim.

Haddan ortiq tanqid, doimiy tanqid sportchining o‘ziga bo‘lgan ishonchini pasaytiradi, undan ijodiy fikrlashni olib qo‘yadi. Tanqid — o‘sishga yordam beruvchi vosita bo‘lishi kerak, ruhiy zarba emas.

E’tiborsizlik agar murabbiy sportchining hissiy holatini, fikrlarini inobatga olmasa, sportchi o‘zini rad etilgandek his qiladi. Bu esa muloqotda sovuqlik paydo qiladi va motivatsiyani pasaytiradi.

Emotsional muvozanatsizlik, murabbiy asabiylashgan holatda bo‘lsa, bu sportchiga salbiy ta’sir ko‘rsatadi. Shuningdek, sportchining stress holatida qolishi ham kommunikatsiyani qiyinlashtiradi. Emotsional barqarorlikni saqlash zarur.

Amaliy tajriba O‘zbekiston milliy terma jamoasida faoliyat yuritayotgan murabbiylar o‘z tajribalarida shuni ta’kidlashadi: sportchining o‘ziga ishonchini oshirish, uning emotsional holatini inobatga olish, individual yondashuv qo‘llash — bu usullar orqali yuqori natijalarga erishish mumkin. Jumladan, 2023-yilda Osiyo chempionatida qatnashgan sportchilarning aksariyati aynan ijobiy kommunikatsiya usullari yordamida muvaffaqiyatli chiqish qilgan.

Badiiy gimnastikada murabbiy va sportchi o‘rtasidagi kommunikatsiya sportchining texnik tayyorgarligi bilan bir qatorda, uning psixologik barqarorligi, motivatsiyasi, o‘ziga bo‘lgan ishonchi va musobaqadagi natijalariga ham ta’sir ko‘rsatadi.

Xulosa qilib aytganda, murabbiy va sportchi o‘rtasidagi samarali kommunikatsiya nafaqat sport natijalarini yaxshilaydi, balki sportchining shaxs sifatida kamol topishiga ham xizmat qiladi. Shu bois ushbu sohada ilmiy izlanishlar, amaliy seminarlar va psixologik tayyorgarlik dasturlarini yanada rivojlantirish lozim.

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HAVZAVIY YONDOSHUV ASOSIDA TABIATDAN FOYDALANISH (SANGZOR DARYO HAVZASI MISOLIDA)

Annotatsiya: *Ushbu maqolada Sangzor daryo havzasi tabiatidan foydalanish ko‘rsatkichlari uning ichki katta-kichik havzalar doirasida o‘rganildi, shu bilan birga havza hududi havzaviy yondoshuv asosida birinchi darajali havzalarga ajratilib, har bir havzaning maydon va yerdan foydalanish ko‘rsatkichlari tahlil qilindi.*

Kalit so‘zlar: *Havzaviy yondoshuv, Sangzor daryo havzasi, DEM, birinchi darajali havzalar, tabiatdan foydalanish.*

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NATURE MANAGEMENT BASED ON THE BASIN APPROACH (ON THE EXAMPLE OF THE SANGZAR RIVER BASIN)

Abstract: *This article studies the indicators of nature management of the Sangzor River basin within its internal large and small basins, while the area of the basin is divided into first-level basins based on the basin approach, and the area and land use indicators of each basin are analyzed.*

Keywords: *basin approach, Sangzor River basin, DEM, primary basins, nature management.*

Kirish. Havzaviy yondashuvni amalga oshirishni nazariy asoslash va tabiatdan foydalanishni havzalarga ajratgan holda rayonlashtirish bo‘yicha ko‘plab tadqiqotlar amalga oshirilgan. Jumladan, rus olimi S.G.Aleksandrov (1986) takidlaganidek, daryo havzalari geografik rayonlashtirishning eng qulay birliklari sifatida tan oladi. F.N.Lisenskiy, A.V.Zemlyakova va boshqalar (2014) tomonidan Belgorod oblasti hududida 62 ta alohida kichik havzalarga ajratilgan bo‘lib, qishloq xo‘jalik maqsadlarida gidrografik-geografik tiplarga ajratadi, M.G.Erunova, O.E.Yakubailiklar (2019) tomonidan Krasnoyarsk o‘lkasining yirik daryolari Kan va Mana daryo havzalarini havzaviy rayonlashtirish asosida 1,2,3,4-darajali 513 ta katta-kichik havza geotizimlarga ajiratadi. Shuningdek, Xitoyning atrof-muhit tadqiqotlari akademiyasi olimlari Lihui Sun, Chang Shu va boshqalar tomonidan Daqing daryo havzasi hududini havzaviy rayonlashtirish asosida 1,2,3,4,5-darajali havzalarga ajratgan holda tadqiq qiladi. B.I.Gartsman (2012) Kamarovka havzasi

hududlarini masofadan zondlash orqali morfologik, gidrologik va iqlimiy ko‘rsatkichlari bo‘yicha ajratib tahlil qiladi [1].

L.M.Koritniy “havza biosferaning maxsus fazaviy birligi sifatida sayyoramizning tabiati va iqtisodiyotini ko‘p qirrali o‘rganish va atrof-muhitni boshqarish uchun eng istiqbolli hisoblanadi” deb takidlaydi [2].

Mamlakatimiz olimlaridan A.K.Urazboyev (2023) o‘zining tadqiqot ishlarida havza konsepsiyasiga alohida to‘xtalib o‘tgan. Jumladan, dala ma’lumotlari asosida Amudaryo deltasidagi sug‘oriladigan yerlarning suv va yer resurslaridan oqilona foydalanishda relyef plastikasi usulidan foydalangan holda tabiatdan foydalanishning havzali konsepsiyasini amalga oshirish bo‘yicha takliflar ishlab chiqqan [3].

Asosiy qism. Ko‘p yillik olib borilgan tadqiqotlar natijasida Sangzor daryosi havzasida havzaviy yondoshuv asosida tabiatdan foydalanish ko‘rsatkichlarini katta-kichik havzalarga ajratgan holda tahlil qilib chiqildi.

Daryo havzasi – nam saqlaydigan jinslarni o‘z ichiga olgan yer yuzasining bir qismi, undan suv alohida daryo yoki daryo sistemasiga oqadi. Daryo havzasini ko‘pincha daryoning suv yig‘ish havzasi deyiladi. Har bir daryo havzasi yer usti va yer osti suv to‘plash havzalarini o‘z ichiga oladi.

Sangzor daryosi suv yig‘ish havzasi maydoni haqida turli manbalarda turlicha raqamlar keltirilgan. Jumladan, L.Alibekov, S.A.Nishanov “Природные условия и ресурсы Джизакской области” (1978) asarida, I.A.Hasanov va boshqalar tomonidan yozilgan “O‘zbekiston tabiiy geografiyasi” (2009) o‘quv qo‘llanmasida 2580 km^2, O‘zbekiston Milliy atlasining (2020) I tomida esa 3220 km^2 hamda boshqa ayrim manbalarda esa bu ko‘rsatkich 2526 km^2 deb keltirib o‘tilgan. Biz tadqiqot hududini L.Alibekov, S.Nishonov va I.A.Hasanovlar tomonidan keltirilgan maydon asosida amalga oshirdik. Chunki, Sangzor daryo havzasi chegaralari bevosita shu nomdagi daryoning suv yig‘ish hududi bilan izohlanadi. Havzaning eng quyi qismi sifatida Sangzor daryosi nomining Sharof Rashidov tumanidagi Gandumtosh mahallasi hududida Qili (328 m) nomi bilan davom etadigan qismigacha bo‘lgan maydon olindi.

Havza hududi janubi-sharqdan shimoli-g‘arbga tomon kengayib borib, eng kengaygan qismi 40-42 km, sharqqa tomon torayib 16-17 km ni tashkil qiladi.

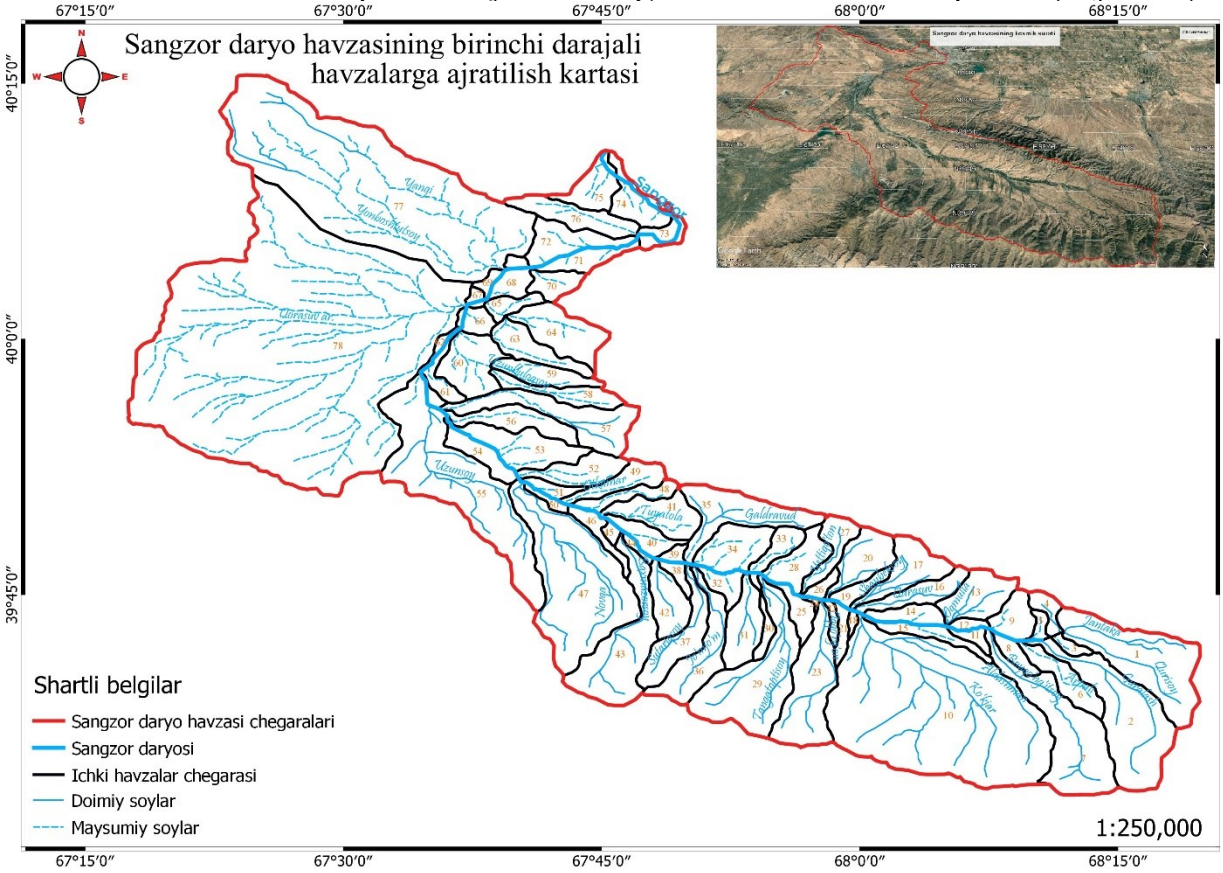
Hozirgi kunda olib borilayotgan tabiiy geografik tadqiqotlarda o‘ziga xos geotizim hisoblangan daryo havzalari hududi doirasida olib borish va tadqiq qilish muhin ahamiyatga ega. Shu nuqtai nazardan ham Sangzor daryo havzasi bo‘yicha havzaviy yondoshuv asosida kichik havzalarga ajratgan holda tabiatdan foydalanish ko‘rsatkichlarini tahlil qilib chiqildi. Bunda havzalarga ajratishda WGS (World Geodetic System) 84 UTM 42H proyeksiyasi bo‘yicha Global Mapper dasturi, MERIT DEM Hydiro raqamli relyef modeli, Global Watershed ilovasidan foydalangan holda katta-kichik havzalarga ajratildi. Shuningdek, ArcMap 10.8 dasturida havzalar chegarasi rasterga moslashtirildi va tekislandi. Shundan so‘ng, QGis dasturida birlashtirish va ajratish asosida havzalarga bo‘lindi.

Umuman daryo havzalarining chegaralarini o‘tkazishda bir qancha omillar asos qilib olindi. Jumladan, havza chegaralarini belgilashda tog‘lar (Chumqortog',

Morguzar, G‘o‘bdun) va ularning asosiy hamda yon suvayirig‘ichlari orqali o‘tkaziladi. Daryolar yuqoridan pastga tomon oqishi, suv yig‘ish maydoni, balandligi uning o‘lchamlari va chegaralarini belgilaydi. Yomg‘ir, qor erishi va boshqa gidrologik jarayonlar daryo havzalarining suv yig‘ilishiga ta’sir qilib, suv manbalari va ularning joylashuvi ham daryo havzasining shaklini belgilaydi.

Daryo havzasi topografiyasining asosiy morfometrik parametrlari to‘g‘risidagi ma’lumotlarni o‘z ichiga olgan havza bo‘linishining ierarxik tizimining ishlab chiqilgan ma’lumotlar bazasi tuzilmasini amalga oshirish jarayonida havza hududi 78 ta 1-darajali ichki havzalarga (1-rasm) ajratildi.

Ajratilgan havzalar doirasida maydonidan tortib yer yuzasining geomorfologik tuzilishi, yer qoplamidan foydalanish turlari, dengiz sathidan o‘rtacha balandligi, o‘simlik va hayvonot olami, aholining joylashish ko‘rsatkichlari va boshqa xususiyatlari o‘rganildi hamda tahlil qilindi (1-jadval).



1-rasm. Sangzor daryosi havzasining birinchi darajali havzalari kartasi

1-jadval

Sangzor daryo havzasining ichki havzalari va ularning maydoni

T/r	Havza nomi	Maydon, km²	t/r	Havza nomi	Maydon, km²	t/r	Havza nomi	Maydon, km²
1	Jantaka	65	27	Yettiqo‘ton	14,4	53	Chuvulloq	30,2
2	Guralash	69	28	Jadik-Duvlat	18,8	54	Abdukarim	12,5
3	Tangiboshi	3,9	29	Tangatoptisoy	64,0	55	Uzunsoy	111,7
4	Jauvli	7,3	30	Qorapchi	8,3	56	Uzunbuloq	21,5
5	Nomsiz	3,7	31	Nomsiz	23,2	57	Uzunbuloqsoy	40,9
6	Arpali	18,4	32	Nomsiz	4,8	58	Bozorboysoy	16,1
7	Boyqo‘ng‘irsoy	69,2	33	Nomsiz	10,3	59	Umarsoy	16,7
8	Nomsiz	7,4	34	Chayish	24,47	60	Madaniyat	27,6
9	Qishlov	14,2	35	Xo‘jasoy	37,2	61	Qoshqabuloq	6,5
10	Ko‘kjar	235,6	36	Jo‘m-jo‘m	31,6	62	Nomsiz	4,3
11	So‘pi-1	4,3	37	Sutariqsoy	26,0	63	Nomsiz	19,4
12	So‘pi-2	3,8	38	Nomsiz	4,8	64	Sayxan	30,1
13	Oqmulla	23,8	39	Nomsiz	3,0	65	Nomsiz	8,0
14	Jillibuloq-1	12,6	40	Nomsiz	10,0	66	Nomsiz	7,9
15	Jillibuloq-2	10	41	Tuyatola	23,8	67	Nomsiz	2,7
16	Qorasuv	16,7	42	Vadigan	19,4	68	Nomsiz	10,0
17	Shaybek	24,3	43	Baxmazorsoy	54,7	69	Nomsiz	4,7
18	Baxmal	1,8	44	Nomsiz	3,7	70	Nomsiz	11,0
19	Abay	7,5	45	Nomsiz	3,2	71	Nomsiz	14,0
20	Toshkeskansoy	22,0	46	Saray	13,9	72	Nomsiz	20,8
21	Nomsiz	5,7	47	Navqa	94,0	73	Jilliguli	9,1
22	Nomsiz	3,5	48	Takli	10,3	74	Kuyovboshi	17,9
23	Oqqo‘rg‘on	47,1	49	Otkamarsoy	14,8	75	Gandumtosh	17,7
24	Nomsiz	2,2	50	Balxi	5,8	76	Qorasoy	23,0
25	Nomsiz	10,1	51	Nomsiz	4,0	77	Tangi	280
26	Nomsiz	3,0	52	Nomsiz	19,7	78	Qorasuv	560

Manba: ushbu jadval ajratilgan havzalarni maydonini masofadan zondlash va Google Earth Pro dasturidan foydalangan holda muallif tomonidan ishlab chiqildi.

Havzalarning maydoni bo‘yicha tahlil qilish shuni ko‘rsatdiki, ularning maydoni bir necha km² dan 560 km² gacha kattalikka ega. Jumladan, umumiy maydoni 10 km² gacha bo‘lgan havzalar 27 ta, 10-20 km² gacha havzalar 24 ta, 20-30 km² gacha havzalar soni 11 ta, maydoni 30 km² dan ortiq bo‘lgan havzalar esa 16 tani tashkil qiladi.

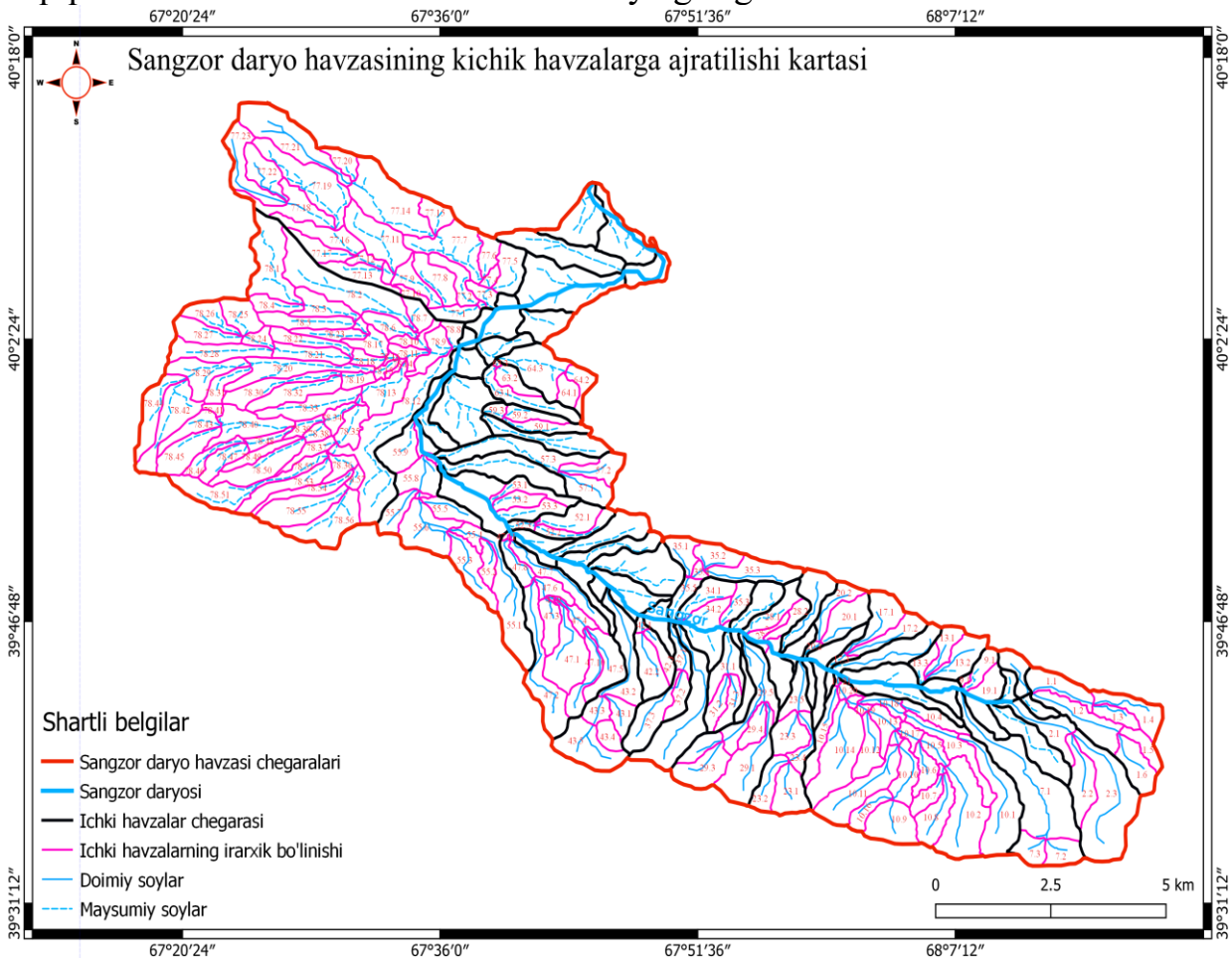
Sangzor daryo havzasini kichik havzalarga ajratish shuni ko‘rsatdiki, bu havzalarning katta qismi Cumqor to‘gining shimoliy yonbag‘ridan oqib tushuvchi soylar asosida shakllangan. Jumladan, Guralash, Boyqo‘ng‘irsoy, Ko‘kjar, Oqqo‘rg‘on, Tangatoptisoy, Jo‘m-jo‘m, Sutariqsoy, Baxmazorsoy, Novqasoy, Uzunsoy, Yonboshtutsoy va Tangi havzalaridir. Bunda Chumqor tog‘laridan boshlanuvchi soylarning havzalari janubdan shimol tomon yo‘nalgan bo‘lib, shu yo‘nalishda Sangzor daryosi tomon pasayib boradi.

Morguzar tog‘ining janubiy yonbag‘ridan oqib tushuvchi soylar hisobiga ham bir qancha havzalar shakllangan bo‘lib, ularda suv oqimlari yil davomida juda

intensiv shaklda namoyon bo‘ladi. Bunga sabab tog‘ yonbag‘irlarining katta qismi quyoshga nisbatan ro‘para yoki janubiy ekspozitsiyada joylashganligi, yo‘g‘in miqdorining kamligi, tuproq qoplamining yaxshi shakllanmaganligi (Morguzar tog‘ining yuqori qismlarida) natijada o‘simlik va hayvonot olamining kamligi bilan izohlash mumkin.

Morguzar tog‘idan boshlanuvchi soylarning havzalari esa maydoni kichik va qisqa masofalarga ega. Buning sababi tog‘ning janubiy yonbag‘ri daryo o‘zani tomon Chumqor tog‘lariga nisbatan tik va qisqa masofaga cho‘zilgan. Shuningdek, birinchi darajali havzalar o‘zi ham bir qancha kichik havzalarga ajratildi. Kichik havzalarga ajratishda eng kichik havza maydoni 5 km^2 asos sifatida olindi. Natijada, 235 dan ortiq kichik havzalar shakli hosil bo‘ldi (2-rasm).

Havza geotizimini bunday kichik havzalarga ajratish har bir havzaning morfometrik ko‘rsatkichlarini tahlil qilish kelgusida har bir havza doirasida tadqiqotlar olib borish uchun muhim ahamiyatga ega.



2-rasm. Sangzor daryo havzasining 2-3-darajali havzalarga ajratish kartasi

Har xil turdagi tabiatdan foydalanish ko‘rsatkichlari asosida kartalashtirish uchun maxsus birlik sifatida havzani tanlash va ajratish yaxshi samara berishiga shubha yo‘q.

Sangzor daryo havzasida yerdan foydalanish darajasiga ko‘ra, ekin ekiladigan (861 km^2) maydonlar, eng katta hududlarni egallagan bo‘lib, umumiy havza hududining 33 % dan ortiq qismini tashkil qiladi (2-3-jadval).

2-jadval

Sangzor daryo havzasida yerdan foydalanishning ayrim ko‘rsatkichlari (2000-2020)

T/r	Yer foydalanish turi	Maydon, km^2		
		2000	2020	o‘zgarish, %
1	Ekin maydonlari	781	861	10
2	Semiarid (yarim qurg‘oqchil) yerlar	868	785	-9
3	Qalin o‘sgan past bo‘yli o‘simliklar	730	655	-10
4	Bino va inshootli maydonlar	107	181	69
5	Daraxtlar bilan qoplangan hududlar	82	81	-1

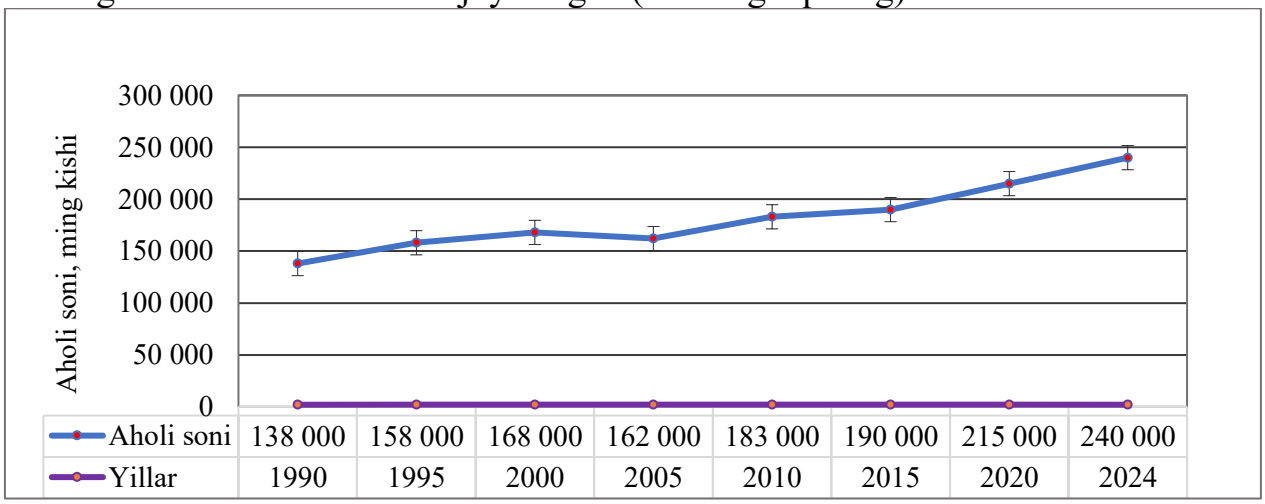
3-jadval

Sangzor daryo havzasidagi ayrim havzalarning tabiatdan foydalanish ko‘rsatkichlari

t/r	Havzalar nomi	Yer qoplami turlari (km^2)									
		Daraxtlar (o‘rmonlar) bilan qoplangan hududlar		Qalin o‘sgan past bo‘yli o‘simliklar		Semiarid (yarim qurg‘oqchil) yerlar		Ekin maydonlar		Bino va inshootli maydonlar	
		2000	2020	2000	2020	2000	2020	2000	2020	2000	2020
1	Guralash	18	16	37	37	14	15	1,4	2,2	2,2	0,3
2	Boyqo‘ng‘irsoy	14	15	41	39	23	22	4,2	6,8	0,2	0,9
3	Ko‘kjar	53	50	121	111	31	38	20	20	7,4	12
4	Tangatoptisoy	2,4	2,4	24	22	23	22	5,8	7,5	3,8	5,3
5	Jo‘m-jo‘m	1,7	1,8	17	16	18	16	9,3	11	0,9	2,2
6	Baxmazorsoy	8,0	7,9	20	16	20	22	7,7	7,7	4,0	4,8
7	Novqa	3,3	3,2	16	10	15	15	42	44	6,1	10
8	Uzunsoy (Tuyatortar bilan birga)	0,5	0,5	19	15	6,7	6,8	75	77	5,0	8,7
9	Qorasuv ar.	-	-	-	-	184	175	252	285	31	48
10	Tangi	-	-	52	58	188	202	37	43	4,2	5,9
11	Sayxonsoy	-	-	17	11	5,3	8,6	37	39	-	-
12	Umarsoy-Uzunsoy	-	-	37	28	12	18	44	44	2,1	4,4
13	Xo‘jasoy	0,2	0,2	11	8,0	13	15	0,1	0,1	-	-
14	Shaybeksoy	1,6	1,5	6,7	6,7	26	24	6,1	7,4	0,8	1,5
15	Jantaka	4,4	4,5	54	50	22	23	1,2	4,4	0,9	1,2

Manba. Ushbu jadval tegishli tashkilotlar ma'lumotlari va GLAD (Global Land Cover and Land Use Change) ma'lumotlari asosida muallif tomonidan ishlab chiqildi.

Sangzor daryo havzasi tabiiy sharoiti qulay bo‘lgani uchun, aholi qadimdan yashab, qishloq xo‘jaligi bilan sug‘ullanib keladi. Hozirgi kunda havza hududida 250 mingga yaqin aholi istiqomat qilib, asosiy qismi Baxmal va G‘allaorol tumanlari aholisiga to‘g‘ri keladi. Jumladan, Baxmal tumani aholisining 50 % ga yaqini yoki 81 ming dan ortig‘i, G‘allaorol tumani aholisining esa 70 % ga yaqini yoki 130 ming ga yaqini istiqomat qiladi.[28] Qolgan aholi esa viloyatning Sharof Rashidov va Jizzax shahari hamda juda kam qismi Samarqand viloyatining Bulung‘ir tumani hududlarida joylashgan (2-rasmga qarang).



3-rasm. Sangzor daryo havzasi hududida aholi soni (1990-2020)

Xulosa. Sangzor daryo havzasining katta-kichik havzalarga ajratilishi shuni ko‘rsatdiki, doimiy oqimga ega bo‘lgan soy havzalari nisbatan katta havzalarga ega ekanligi aniqlandi.

Ichki havzalarning yerdan foydalanish ko‘rsatkichlarida haydaladigan yerlar katta maydonni tashkil etishini ko‘rish mumkin. Havza hududida aholi soni yillar davomida muttasil ortib borayotganligi kuzatilmoqda. Mahalliy aholining havza tabiatiga bevosita va bilvosita ta'sirlarini doimiy ravishda o‘rganib, monitoring kuzatishlarini olib borish kerak.

Sangzor daryo havzasi ichki havzalarining tabiiy sharoitlarini hisobga olgan holda ixtisoslik pasporti ishlab chiqish lozim.

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THE IMPACT OF GLOBAL CLIMATE CHANGE ON URBAN DEVELOPMENT

Abstract: *This article provides a comprehensive analysis of the impact of global climate change on cities and urbanized areas. In particular, it examines how factors such as increased temperatures, extreme weather events, sea level rise, and increased air pollution will affect urban infrastructure, public health, energy, and transportation systems. The article also analyzes climate adaptation strategies, green infrastructure, and urban approaches to sustainable development. The results of the study offer practical recommendations for making cities more resilient and adaptable.*

Keywords: *Global climate change, urbanization, urban development, environmental security, sustainability, green infrastructure, climate adaptation, environment.*

Global climate change is a process that includes factors such as temperature increases, extreme weather events, and sea level rise, which significantly affects the development of cities and urbanized areas. Cities are home to the majority of the population and are the main centers of economic activity. Therefore, the impact of climate change is widely distributed through cities. This article examines the impact of climate change on urban development, existing problems, and proposals for their elimination.

It is known that natural geographical processes and phenomena in cities differ significantly from rural areas and natural landscapes. Climate change in cities is certainly associated with natural geographical processes. In cities, infrastructures built by man - various buildings and structures, roads, parks - almost completely occupy the city area. Engineering structures used for various purposes in cities, human economic activities affect the climate, creating and releasing specific climatic features. Such climatic features can be clearly observed in the level of air humidity, wind movement, solar radiation and albedo. It is known that changes in the climate of cities are primarily related to climate. Because the state of the air there is one of the most important factors influencing the formation and development of cities.

Climate has a high impact on the formation and development of cities, especially the most important elements of climate, such as air temperature and humidity, wind regime and direction, and atmospheric precipitation. Cities, as a

rule, have impermeable surfaces and vegetation cover in small areas, unlike the natural and agricultural lands surrounding them. Global climate change in cities causes and produces a number of economic and social problems. This has a negative impact on the development of the city, its economy, industry, and all production sectors. In the development of cities, not only the influence of natural geographical factors, but also the influence of anthropogenic factors is of great importance. Therefore, most cities in the world are developing and implementing plans to adapt cities to the latest innovative requirements, to ensure the long-term preservation of the city and the prosperity of this city over time, while enduring the passage of time.

Climate change in the world cannot but have a huge impact on the urban areas of cities. For this reason, climate change suggests that some of the problems of cities should be discussed and resolved. Today, global climate change cannot but affect the flora of cities and their surrounding areas. The impact of global climate on the development of cities, such as sunlight, relief, air masses, atmospheric precipitation, seismic events, and volcanic processes, can be studied in detail on cities and urbanizing areas. For example, as we know, the number of cities in the world is increasing day by day. Along with the increase in the number of cities, these cities also face a number of tasks. Of course, finding solutions to this and solving these problems first raises the issue of solving the negative problems that arise in cities and finding solutions to them and further developing these cities.

When building and developing cities, we must study the laws of nature and their impact on the future. If we build a city in that area without studying the impact of climate on the development of cities in the world, this will lead to the disappearance of the city in the future. It is no secret to anyone that since ancient times, when building cities, the climate of the city being built is thoroughly studied and analyzed. When building cities, from the point of view of urban planning, the influence and importance of the relief of the place, climate, surface and underground water sources are very great. One of the factors of global climate change is solar energy. When building cities in regions with high solar energy, it is advisable to take into account wind directions, build heat-resistant buildings and build cities that create comfort for the population. To do this, we must study the impact of climate on the city, study the work being done in each city, and then study the feasibility of building new industrial enterprises there.

Cities around the world have emerged in different places. Some cities are located on the banks of rivers, while others are located on continental, that is, land areas. These two groups of cities differ sharply in terms of climate and urban development. Cities located on the banks of rivers develop faster than continental cities. Cities located on the banks of rivers are distinguished by their high level of air quality and uniform precipitation compared to continental countries.

At a time when global climate change is taking place all over the world, another problem in some regions is the occurrence of floods, which cannot but affect cities. Cities are one of the unique ecological hotspots of our planet. The word “hot” used here should be understood in the correct sense. Due to the density of buildings, various emissions from enterprises and vehicles remain in the atmosphere above

cities near the ground surface. They create a greenhouse effect, raising the air temperature in the urban area and its surrounding areas by several degrees compared to the surrounding area. That is why scientists call cities heat islands. Heat islands are areas in the center of a large city, for which the air temperature is higher than that of the surrounding area. The effect of the urban heat island is most noticeable in the evening and at night, especially in spring and autumn. At such times, the temperature difference between the city center and its surroundings can reach 10-15 0 C. The heat island effect is becoming more pronounced in large megacities, as temperatures on our planet increase. We know from personal experience about the urban heat island: on hot summer days, it does not prevent us from walking around the city in light clothing in the evening. In the suburbs, even in the hottest summer month, at the same time, we feel cool even in a light jacket. This is due to the slower cooling of air near the surface of the earth in urban environments. It is heated by the heat reserve absorbed by the walls and roofs of buildings during the day.

Global climate change does not have good consequences for cities around the world and our country. This causes a number of problems in cities. The sharp changes in the economy and social conditions of most cities in the African continent due to global climate change cannot but affect the development of these cities. This places a huge burden on the capitals of such countries. Sharp climate change is characterized by the emergence of an unfavorable environment for the population to live in cities. Climate change in cities has a huge impact on every sector of this city. For example, from the economy to all the household services that are convenient for the population to live, it also has an impact on the buildings of the city.

The formation of cities in Surkhandarya region and Kashkadarya region varies depending on the climate. The level of urbanization in our city, Koson, Nishon, Kasbi, Mubarak, is very low. There are several reasons for this. The lack of fresh water in the city and the opportunity for the population to live there are some difficulties. Such problems are also common in our city, Kashkadarya. There are cities where the population has a high need for fresh water. These include Koson, Nishon, Mirishkor, Kasbi, Mubarak and other cities. The population's need for water also includes the urbanization process of cities. Atmospheric air, precipitation, solar radiation, volcanic processes, and tectonic structures of individual cities also have a great impact.

Global climate change is having a significant impact on urban development. Factors such as rising temperatures, extreme weather events, and declining water resources are negatively affecting urban infrastructure, public health, and economic activity. To address these challenges, strategies such as green infrastructure, sustainable transportation systems, water-saving technologies, and social adaptation approaches are needed.

Reduce the heat island effect and improve air quality by increasing the number of green zones in urban areas - parks, groves, green roofs and walls. Introduce sustainable urban planning concepts

Every new urban development project should be climate-resilient and include energy and water-efficient technologies. Reduce harmful emissions from urban transport by expanding electric buses, bicycles and pedestrian walkways. Use environmentally friendly, heat-retaining and recyclable building materials in the development of urban infrastructure. Each city should have its own climate adaptation and protection plan.

Conducting extensive educational work on climate change and its impact on urban life through schools, higher education institutions and the media. Strengthening awareness-raising campaigns among urban residents on saving water, electricity and proper waste separation. Introducing smart systems (smart city technologies) in urban infrastructure to automate resource use and increase efficiency. Updating and maintaining urban emergency services in readiness for rapid response in the event of extreme weather events (storms, floods, droughts). Actively using international experience and financial assistance (grants, technical assistance) for sustainable urban development.

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ECOLOGICAL-GEOGRAPHICAL PROBLEMS IN THE RESIDENTIAL AREAS OF KASHKADARYA REGION

Abstract: *Kashkadarya region, located in the southwestern part of Uzbekistan, is known not only for its natural resources, but also for its ecological and geographical problems in rural and urban areas. This region faces such problems as the deterioration of the ecological situation, pollution of soil and water resources, poor air quality, and climate change. In rural areas, flora and fauna are weakening, and in urban areas, industrial waste, water supply, and transport problems are increasing. The article analyzes the ecological and geographical problems in rural and urban areas of Kashkadarya region, reviews the current situation, and makes recommendations for solving these problems.*

Keywords: *Kashkadarya region, rural settlements, urban areas, ecological and geographical problems, water resources, soil pollution, air quality, industrial waste, climate change, transport problems, ecology, social problems.*

Introduction: Kashkadarya region occupies the southwestern part of Uzbekistan and is an important center for agriculture and industry. At the same time, there are a number of ecological and geographical problems in the region. In rural areas, problems such as soil erosion, water supply and crop quality decline are rampant. In urban areas, industrial activity, the intensification of the transport system and waste management problems are leading to an increase in environmental problems. This article recommends analyzing the ecological and geographical problems in rural and urban areas and taking the necessary measures to eliminate them.

Soil pollution is widespread in rural areas of Kashkadarya region. The main causes of this problem are the excessive use of fertilizers and pesticides, as well as industrial waste and long-term damage to the soil by cultivated crops. This reduces crop yields and worsens soil fertility. Improper use of water resources, pollution of water bodies, especially drinking water and irrigation sources, negatively affect the quality of water.

Air pollution in rural areas is mainly caused by emissions from high-intensity agricultural activities and immature industrial facilities. This especially affects the health of the rural population. However, the overall deterioration of air quality significantly increases the gap between urban and rural areas.

As a result of industrial development in urban areas, a large number of polluting emissions are emitted. In particular, the chemical industry, the production of building materials and other industries are causing air, soil and water pollution. These emissions pose a threat not only to nature, but also to the health of the population.

The increase in the number of vehicles in urban areas is increasing air pollution. The gases emitted by many cars and heavy goods vehicles worsen air quality. Overloading of the transport network and insufficient development of road infrastructure are also important problems.

There are problems with clean water supply in urban areas. Along with the growth of the population, the inadequacy of drinking water and wastewater treatment facilities leads to improper use of water and its pollution. This negatively affects the health of the population.

Ecological and geographical problems have a serious impact not only on nature, but also on the health of the population. Water pollution, toxic gases in the air, soil degradation lead to many diseases, including respiratory diseases, allergies, and cardiovascular diseases. The risk is especially high for vulnerable groups such as children, the elderly, and pregnant women. Also, high levels of air pollution affect not only physical but also mental health.

Environmental and geographical problems in the Kashkadarya region, especially in rural areas, are leading to a slowdown in economic development. Pollution of soil and water resources reduces the production of agricultural products. This, in turn, leads to a decrease in the income of the population, aggravation of economic problems, and an increase in migration processes from rural areas to cities or other regions.

Conclusion: Ecological and geographical problems in rural and urban areas of Kashkadarya region pose a serious threat. Soil, water and air pollution, climate change and industrial waste are affecting not only natural resources, but also the health of the population and economic stability. Systematic measures are needed in all sectors to ensure ecological sustainability in this region.

Proposals and recommendations

- ✓ Environmental monitoring and efficient use of resources
- ✓ It is necessary to develop an environmental monitoring system and strengthen environmental monitoring mechanisms, constantly monitor the state of soil, water and air. It is necessary to introduce advanced technologies for efficient use of water and reduction of water pollution.
- ✓ Reduction of pollutants emitted from industry and transport. Implementation of modern technologies for recycling industrial waste and preventing environmental damage. Development of the transport system, reduction of vehicle emissions and introduction of green technologies.
- ✓ Combating climate change and expanding green areas;
- ✓ Taking environmental protection measures to restore forests, increase green areas and combat climate change.

✓ Public awareness and environmental education. Informing the population about environmental problems, reducing environmental risks and protecting the environment.

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BOSHLANG‘ICH SINF O‘QUVCHILARIDA HUQUQIY ONGNI RIVOJLANTIRISHNING PEDAGOGIK SHARTLARI

Annotatsiya: *Boshlang‘ich sinf o‘quvchilarida huquqiy ongni rivojlantirish ta’lim jarayonining muhim qismidir. Bu yosh davrda bolalar jamiyatda o‘z o‘rnini anglash, huquq va majburiyatlar bilan tanishish, shuningdek, ijtimoiy munosabatlarda to‘g‘ri harakat qilish ko‘nikmalarini shakllantirishlari kerak. Huquqiy ongning rivojlanishi bolalarning kelajakda fuqarolik mas’uliyatini to‘liq anglashlari, qonunlarga hurmat bilan qarashlari va o‘z huquqlarini himoya qila olishlari uchun poydevor yaratadi. Shu sababli, pedagogik shart-sharoitlarni yaratish va ularni ta’lim jarayoniga to‘g‘ri integratsiya qilish muhim ahamiyatga ega.*

Kalit so‘zlar: *boshlang‘ich sinflar, huquqiy ong, huquqiy tushunchalar, rolli o‘yinlar, pedagogik yondashuvlar, ta'lim, shart-sharoitlar, interaktiv ta’lim platformalari.*

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PEDAGOGICAL CONDITIONS FOR THE DEVELOPMENT OF LEGAL AWARENESS IN PRIMARY SCHOOL STUDENTS

Abstract: *The development of legal awareness in primary school students is an important part of the educational process. At this young age, children need to understand their place in society, get acquainted with rights and obligations, as well as develop the skills to act correctly in social relationships. The development of legal awareness creates the foundation for children to fully understand their civic responsibility in the future, respect the law, and be able to protect their rights. Therefore, it is important to create pedagogical conditions and properly integrate them into the educational process.*

Keywords: *primary school, legal awareness, legal concepts, role-playing games, pedagogical approaches, education, conditions, interactive educational platforms.*

Huquqiy ongni rivojlantirishda pedagogik shart-sharoitlar bir qancha omillarni o‘z ichiga oladi. Ulardan biri – ta’lim muhitining ijobiy va qo‘llab-quvvatlovchi bo‘lishidir. O‘quvchilar o‘z fikrlarini erkin ifoda eta oladigan, savollar berishdan cho‘chimaydigan, xatolaridan o‘rganadigan muhitda o‘qishlari zarur. Bu esa ularning huquqiy tushunchalarni o‘zlashtirishiga yordam beradi. Pedagoglar esa o‘quvchilarning individual xususiyatlarini hisobga olib, har bir bolaning huquqiy

bilimlarini rivojlantirishga yo‘naltirilgan faoliyatni tashkil etishlari lozim. Boshlang‘ich sinf o‘quvchilarida huquqiy ongni shakllantirishda o‘yin metodlari katta ahamiyatga ega. O‘yinlar yordamida bolalar huquqiy tushunchalarni amaliyotda qo‘llashni o‘rganadilar. Masalan, rolli o‘yinlar orqali ular turli ijtimoiy vaziyatlarni boshdan kechiradilar, bu esa huquqiy masalalarni yanada yaqqolroq anglashga yordam beradi. O‘yin jarayonida bolalar o‘zaro muloqot qilish, muammolarni hal qilish va boshqalar bilan hamkorlik qilish ko‘nikmalarini rivojlantiradilar. Shu tariqa, huquqiy ong nafaqat nazariy bilim, balki amaliy ko‘nikma sifatida shakllanadi. O‘quv jarayonida huquqiy ma’lumotlarni o‘rgatishda interaktiv usullarni qo‘llash ham samarali hisoblanadi. Masalan, multimediyaviy taqdimotlar, videofilmlar, animatsiyalar va elektron darsliklar yordamida murakkab tushunchalar bolalar uchun tushunarli va qiziqarli shaklda taqdim etiladi. Bu vositalar orqali o‘quvchilar huquqiy normalar va ularning ahamiyatini yaxshiroq tushunadilar. Shuningdek, interaktiv muhitda o‘quvchilar o‘z fikrlarini erkin bildirishlari va pedagog bilan muloqot qilishlari osonlashadi.[1]

Huquqiy ongni rivojlantirishda ota-onalar bilan hamkorlik muhim o‘rin tutadi. Oila – bolaning birinchi ijtimoiy muhitidir va u yerda shakllanadigan qadriyatlar, odatlar va xulq-atvor bolalarning huquqiy ongiga bevosita ta’sir ko‘rsatadi. Pedagoglar ota-onalarni huquqiy tarbiya jarayoniga jalb qilishi, ularga huquqiy tarbiya bo‘yicha maslahatlar berishi va uyda ham bolalar bilan shu mavzuda ishlashni tashkil etishi zarur. Shu yo‘l bilan huquqiy ongni mustahkamlashda maktab va oila o‘rtasida uzviy bog‘liqlik yaratiladi. Ta’lim jarayonida bolalarning huquqiy bilimlarini mustahkamlash uchun mavzuga oid loyihalar va tadbirlar tashkil etish foydali bo‘ladi. Masalan, “Huquq va adolat” mavzusida kichik guruhlarda ishlash, huquqiy masalalar bo‘yicha diskussiyalar, viktorinalar va tanlovlar o‘tkazish o‘quvchilarning mavzuga bo‘lgan qiziqishini oshiradi. Bu tadbirlar bolalarning mustaqil fikrlashini rivojlantiradi, ularni huquqiy masalalarga faol jalb qiladi va o‘z fikrlarini himoya qilishga o‘rgatadi. [2]

Pedagogik shart-sharoitlardan yana biri – o‘quvchilarning huquqiy faoliyatga jalb qilinishi. Bu ular uchun o‘z huquqlari va majburiyatlarini amalda sinab ko‘rish imkonini beradi. Masalan, maktab ichida o‘quvchilar kengashi faoliyatida ishtirok etish, sinf qoidalarini birgalikda ishlab chiqish kabi faoliyatlar bolalarning huquqiy ongini oshiradi. Shu bilan birga, bunday faoliyatlar o‘quvchilarda mas’uliyat hissini shakllantiradi va jamoaviy ish ko‘nikmalarini rivojlantiradi. Huquqiy ongni rivojlantirishda pedagoglarning o‘zlari ham yuqori malakaga ega bo‘lishlari kerak. Ular zamonaviy ta’lim texnologiyalari va pedagogik metodlarni bilishlari, huquqiy tarbiya sohasidagi yangiliklardan xabardor bo‘lishlari zarur. Pedagoglarning professional o‘sishi bolalarga sifatli va samarali huquqiy ta’lim berish imkonini oshiradi. Shu sababli, ularni muntazam ravishda malaka oshirish kurslariga jalb qilish va metodik yordam ko‘rsatish muhimdir.[3]

Huquqiy ongni shakllantirishda maktabning tashkiliy va moddiy-texnik bazasi ham katta rol o‘ynaydi. Maktabda huquqiy tarbiya uchun maxsus xonalar, kutubxonalar, multimedia vositalari mavjud bo‘lishi, o‘quvchilar uchun qulay va xavfsiz muhit yaratilishi zarur. Bu shart-sharoitlar o‘quvchilarning huquqiy

bilimlarni o‘zlashtirishini osonlashtiradi va ularni ta’lim jarayoniga yanada faol jalb qiladi. Shuningdek, huquqiy ongni rivojlantirishda jamiyatning ijtimoiy-iqtisodiy sharoitlari ham ta’sir ko‘rsatadi. [4]

Xulosa:

Shunday qilib, boshlang‘ich sinf o‘quvchilarida huquqiy ongni rivojlantirish – bu murakkab va ko‘p qirrali jarayon bo‘lib, uni samarali tashkil etish uchun pedagogik shart-sharoitlarni yaratish zarur. Bu shart-sharoitlar bolalarning huquqiy bilimlarini mustahkamlash, ularning ijtimoiy faolligini oshirish va kelajakda mas’uliyatli fuqarolar bo‘lib yetishishlariga xizmat qiladi. Ta’lim jarayonida huquqiy ongni rivojlantirishga e’tibor qaratish, zamonaviy pedagogik yondashuvlarni qo‘llash va barcha ta’lim ishtirokchilarining hamkorligini ta’minlash orqali biz mustaqil va huquqiy madaniyatga ega jamiyat barpo etish yo‘lida muhim qadamlarni qo‘yishimiz mumkin.

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MAKTABGACHA YOSHDAGI BOLALARNING KOGNITIV JARAYONLARI VA AQLIY RIVOJLANISHINING AHAMIYATI

Annotatsiya: *Ushbu maqolada Maktabgacha yoshdagi bolalarning bilish jarayonlari va aqliy rivojlantirish haqida yoritilgan. Bilish jarayonida bolaning ongi, his tuyg'ulari shakllanadi. Eng muhimi ijtimoiy hayot uchun zarur bo'lgan va ijtimoiy munosabatlarga xizmat qiladigan xulqiy odatlar hosil bo'ladi. Maktabgacha yoshdagi bolalarning yosh va individual xususiyatlarini e'tiborga olgan holda ularning har tomonlama rivojlanishini ta'minlashga xizmat qiladi. Maktabgcha ta'lim tashkilotlari ham bolalarni har tomonlama tarbiyalaydi*

Kalit so'zlar: *Maktabgacha yosh, bola, bilish jarayon, aqliy rivojlantirish, ongi, his tuyg'u, individual xususiyat, og'zaki ijodiyot, mutafakkir, pedagog,olim*

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THE IMPORTANCE OF COGNITIVE PROCESSES AND MENTAL DEVELOPMENT OF PRESCHOOLERS

Abstract*: This article examines the cognitive processes and mental development of preschoolers. In the process of cognition, the child's consciousness and feelings are formed. First of all, behavioral habits are formed that are necessary for social life and serve social relationships. It serves to ensure the comprehensive development of preschoolers, taking into account their age and individual characteristics. Preschool educational organizations also provide comprehensive education for children.*

Keywords: *preschooler, child, cognitive process, mental development, consciousness, feeling, individual peculiarity, verbal creativity, thinker, teacher,scientist*

Maktabgacha yoshidagi bolalar turli narsalarni idrok qilishda ularning ko‘zga yaqqol tashlanib turuvchi belgilariga asoslansalar ham, lekin chuqur tahlil qila olmaydilar. O`zbekiston Respublikasini rivojlangan mamlakatlar qatoridan joy egallashini ta‟minlash, yosh avlodning komil inson bo`lib kamol topishiga bevosita bog`liqdir. O`zbekiston Respublikasi Prezidenti Sh.Mirziyoyev rahbarligida 2017 yil 16 avgust kuni bo`lib o`tgan yig`ilishda maktabgacha ta'limtizimini tarkibiy jihatdan tubdan isloh qilish, mazkur muassasalarga bolalarni to`la qamrab olish bo`yicha muhim vazifalar qo`yildi. Bu boradagi tahlillar natijasida qisqa vaqtda uchta yirik hujjatO`zbekiston Respublikasi Prezidentining 9 sentyabrdagi

“Maktabgacha ta’lim tizimini tubdan takomillashtirish chora-tadbirlari to`g`risida”gi PQ-3261-sonli qarori, 30 sentyabrdagi “Maktabgacha ta’lim tizimi boshqaruvini tubdan takomillashtirish chora-tadbirlari”gi PF-5198-sonli Farmoni hamda “O`zbekiston Respublikasi Maktabgacha ta’lim vazirligi –faoliyatini tashkil etish to`g`risida”gi PQ-3305-sonli qarori qabul qilindi. O’zbekiston Respublikasi Maktabgacha ta’lim vazirligi, uning hududiy bo’linmalarining asosiy vazifalari va faoliyati yo’nalishlari qatorida ilg’or xorijiy tajribani hisobga olgan holda maktabgacha yoshdagi bolalarni har tomonlama intellektual, ahloqiy, estetik va jismoniy rivojlantirish uchun shart-sharoitlar yaratish berish belgilandi. Shuning uchun ham o‘zbek milliy-ma’naviy merosi jahon madaniyatining ajralmas uzviy qismidir. Bugungi globallashuv jarayonida dunyo miqyosida maktabgacha yoshdagi bolalarni ma’naviy-axloqiy tarbiyalashning innovatsion modellari va mexanizmlari ishlab chiqish, xalq og’zaki ijodi namunalarini pedagogik texnologiyalar va ta’lim strategiyalari bilan o’zaro uyg’unlikda bag’rikenglik munosabatlari ruhida va ma’naviy-axloqiy tarbiyalashning ilmiy-metodik ta’minotini takomillashtirish, maktabgacha yoshdagi bolalarni sog’lom muhitda ta’lim va tarbiya olishlarini ta’minlash, ularni boshlang’ich maktab ta’limiga sifatli tayyorlash dolzarb yo’nalishlardan biri hisoblanadi. Maktabgacha yoshdagi bolalarning kelgusida maktab bilimini yaxshi o‘zlashtirishi, maktabga moslashuvining yengil o‘tishi, bola shaxsida yuzaga kelishi mumkin bo‘lgan muammolarning oldini olish, qiyinchiliklarni bartaraf etishni amalga oshirishda bolalarning maktabgacha ta’lim tashkilotiga jalb etilganligi, ta’limga qamralganligi alohida ahamiyatga egadir.

Aqliy tarbiyaning asosiy vazifalari:

1. Bolalarda tabiat va jamiyat to’g’risidagi bilimlar tizimini, ilmiy dunyoqarashni shakklantirish;
2. Aqliy faoliyat bilish jarayonlari va qobiliyatlarini, aqliy jarayonning xilma xil usullarini rivojlantirish;
3. Mustaqil bilish qobiliyatlarini aqliy mehnat madaniyatini rivojlantirish;
4. Aqliy bilim, ko’nikma va malakalarini rivojlantirish.

Bilimni tasavvurlar va tushunchalar, qoidalar, qonuniyatlar, sistemalar shaklidagi turli fanlarning mazmunini tashkil etadi. Aqliy tarbiyaning vazifasi bolalarda voqea va hodisalarni to’la aks ettiradigan yuksak darajadagi umumlashtirilgan bilimlar tizimini shakklantirishdan iboratdir. Bilim dunyoqarashning asosini tashkil etadi.

Xullas, bola eng oddiy aqliy faoliyat usullarini egallab boradi. Maktabgacha yoshdagi bolalarning aqliy rivojlanishini ta’minlash ularning kelajakdagi butun faoliyati uchun katta ahamiyatga ega .Bola ijtimoiy muhit ta’sirida aqliy tomondan rivojlanib boradi. Atrofdagi kishilar bilan muomala qilish jarayonida u tilni va u bilan tarkib topgan tushunchalar sistemasini o’zlashtiradi. Natijada maktabgacha tarbiya yoshidagi bola tilni shunchalik egallab oladiki,undan muomala vositasi sifatida erkin foydalanilgan bo’lib qoladi. Vatanimiz mustaqillikka erishgach, barcha sohalar qatorida maktabgacha ta’lim sohasida ham juda ko’plab ijobiy

o’zgarishlar yuz bermoqda. Bugungi maktabgacha yoshdagi bolajonlar va qizaloqlar zimmasida sog’lom, aqlli bo’lib, jamiyatimizning faol a’zolariga aylanishdek katta vazifa turibdi.

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ENHANCING THE IMPACT OF ENTREPRENEURIAL ENTITIES ON ECONOMIC DEVELOPMENT: GLOBAL EXPERIENCES AND APPROACHES (CASE STUDY OF SURKHANDARYA REGION)

Abstract: *This paper explores the role of entrepreneurship in fostering economic development in the Surkhandarya Region of Uzbekistan. It examines global best practices and approaches to enhancing the effectiveness of entrepreneurial entities and analyzes how these can be adapted to the regional context. The study utilizes statistical data, comparative analyses, and case studies to provide actionable recommendations for policymakers and stakeholders.*

Keywords: *Entrepreneurship, Economic Development, Surkhandarya Region, Small and Medium Enterprises (SMEs), Global Best Practices, Policy Recommendations*

Entrepreneurship plays a vital role in the economic development of any region. In the context of the Surkhandarya Region, where the Gross Regional Product (GRP) increased by 5.9% in 2023, small and medium-sized enterprises (SMEs) accounted for 75.9% of this growth. Despite this, several challenges remain, including limited access to finance, a complex regulatory environment, and insufficient infrastructure and training programs.

Global best practices reveal effective strategies that could be adapted to improve entrepreneurial impact in Surkhandarya. For example, Chile's government-backed Start-Up Chile initiative provides equity-free grants and has significantly boosted local innovation and job creation. The Global Innovation through Science and Technology (GIST) initiative, led by the U.S. government, helps emerging entrepreneurs in science and tech fields in developing economies.

To bring similar successes to Surkhandarya, a comparative analysis suggests several key areas for development. First, simplifying business registration and tax policies will lower entry barriers. Second, increasing financial support through local credit institutions and venture capital will enable entrepreneurs to grow and scale their businesses. Third, establishing business incubators and training centers will equip young entrepreneurs with the necessary skills. Lastly, infrastructure development, especially in rural areas, will ensure broader economic engagement.

In 2023, the government allocated $40 million to support youth entrepreneurship, offering loans of up to $100,000 with flexible terms. Additionally, the region is expanding the Termez Special Economic Zone and developing youth industrial zones to foster entrepreneurship.

Table 1: GRP Growth in Surkhandarya Region (2022-2023)

Year	GRP (billion soums)	Growth Rate (%)
2022	51,300.0	—
2023	54,354.1	5.9

Table 2: Number of Operating SMEs in Uzbekistan by Region (2023)

Region	Number of SMEs	Share in Total (%)
Surkhandarya	32,000	7.7
Tashkent	85,000	20.4
Samarkand	48,000	11.5

As of October 1, 2023, there were 21.2 thousand small businesses and microfirms operating in Surkhandarya region.

The majority of them operate in the following sectors:
Trade: 1,156 enterprises
Industry: 576 enterprises
Agriculture, forestry, and fisheries: Exact number of enterprises not specified

Large-Scale Industrial Projects

Major industrial enterprises also operate in the region. For example:
• “Oravit Ceramic” LLC: Launched in 2021, this enterprise produces 48,000 units of household and decorative ceramic products annually. It has created 80 jobs.
• “Surkhandaryotaminbutlash” LLC: A project worth $2.5 million is being implemented to produce laminated particle board (DSP) products.

These projects contribute significantly to the regional economy.

Family Entrepreneurship and Preferential Loans

Under the “Every Family is an Entrepreneur” program, preferential loans are being allocated to support the development of family businesses. These loans are formed from the repayment of previously issued loans. The regional administration is also taking measures to rehabilitate businesses and combat the shadow economy.

Industrial and Entrepreneurial Zones

According to Presidential Decree No. PQ-400 dated December 21, 2023, a 4.0-hectare land plot in the “G‘alaba” SIU neighborhood, “Qo‘zichoq” MCG area of Denov district, has been allocated as a youth industrial and entrepreneurial zone. Additionally, a 17.0-hectare land area has been included in the “Termez” Free Economic Zone.

Table: Overview of Businesses, Industrial Zones, and Key Enterprises in Surkhandarya Region

Category	Enterprise/Zone Name	Details	Year of Establishment	Contribution to Economy
Small Businesses (Micro and Small Enterprises)	General Overview	21,200 micro and small businesses operating in the region. Main sectors include trade, industry, agriculture.	2023	Vital for local economic growth and employment in various sectors.
Trade Sector	Various Trade Enterprises	1,156 businesses engaged in wholesale and retail trade.	2023	Major contributor to regional GDP and employment.
Agriculture, Forestry, Fisheries	Various Agricultural and Forestry Entities	Exact number of businesses in agriculture and related fields not specified, but key sector for the region's economy.	2023	Major role in providing raw materials and contributing to food security.
Large Industrial Projects	Oravit Ceramic LLC	Produces 48,000 ceramic household and decorative items annually.	2021	Key to enhancing the regional manufacturing sector, creating jobs, and boosting exports.
Industrial Projects	Surkhandaryo ta'minot LLC	$2.5 million project focused on the production of DSP laminated boards.	Ongoing	Significant investment in industrial infrastructure with a long-term economic impact.
Youth Industrial Zone	G'alaba SIU, Qo'zichoq MCG	4.0 hectares dedicated to youth entrepreneurship and small-scale industrial projects.	2023	Encouraging youth participation in economic activities, fostering innovation.
Free Economic Zone	Termiz Free Economic Zone (FEZ)	17.0 hectares allocated for business activities, benefiting from tax exemptions and customs privileges.	2023	Attracts foreign investment, enhances regional trade, and offers economic incentives.

Key Insights:

1. **Small and Micro Businesses** are central to Surkhandarya's economy, providing a broad base of employment and economic activity across various sectors such as trade, industry, and agriculture.
2. **Large Industrial Projects** like **Oravit Ceramic** and **Surkhandaryota'minot** are contributing to regional economic development through manufacturing and export-oriented products.
3. **Industrial Zones** such as the **Termiz Free Economic Zone** and the **G'alaba SIU** are being developed to attract investment and foster entrepreneurship, particularly targeting youth and family businesses.

Conclusion

Globally, entrepreneurship is recognized as a key driver of economic growth, job creation, and innovation. Small and medium-sized enterprises (SMEs) play a critical role in ensuring economic stability and development. In the case of Surkhandarya, the region offers significant potential for boosting entrepreneurship through its rich agricultural resources, opportunities for tourism, and emerging industrial infrastructure.

Global best practices show that government support, access to financing, and fostering innovation are crucial in enabling the growth of entrepreneurial entities. For example, Japan's support for small and medium businesses, through financial assistance programs, and Germany's approach to promoting innovation through startup hubs, can be adopted to enhance Surkhandarya's entrepreneurial environment. Based on these global experiences, the following strategic areas should be prioritized for fostering entrepreneurship in Surkhandarya:

1. **Financial Support and Credit Systems**: Providing entrepreneurs with access to concessional loans, grants, and financial incentives to support business growth.
2. **Entrepreneurial Education and Training**: Offering business management courses and capacity-building programs for small and medium enterprises.
3. **Technological Innovation**: Encouraging the adoption of new technologies, promoting innovation, and integrating them into business operations.
4. **Infrastructure and Logistics Development**: Improving the local infrastructure, including transportation and communication systems, to support entrepreneurial activities.

By adapting global experiences to the local context, Surkhandarya can build a robust entrepreneurial ecosystem, which will contribute to sustainable economic growth and development in the region.

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APPLYING THE FOOTPRINT OF DEVELOPED COUNTRIES IN THE LOCALIZATION OF ENERGY-EFFICIENT BUILDING CONSTRUCTION

Abstract: *This article provides information about the work carried out in many countries on increasing energy efficiency factors in the construction of modern buildings and structures, which are now one of the most pressing issues, and the implementation of this type of work in local conditions and the results expected from it.*

Key word: *Energy efficient, environmental, Passive House, thermal mass, environmental, renewable energy, thermal mass.*

In our country, today, the issue of building energy-efficient, economical houses is emphasized as one of the most important factors in the development of the construction sector, in particular, the main task is to enrich the buildings of residential, social sphere facilities, which are being built on the basis of model projects in rural and urban areas within the framework of state programs.

More than three years have passed since the signing of the Paris agreement on climate change by Uzbekistan, a global climate agreement adopted within the framework of the main United Nations climate change convention and urging participants to take measures to reduce the amount of carbon dioxide in the atmosphere from 2020.

The date of signing this international document almost coincided with the approval by the Government of Uzbekistan of a joint project with our GEJ (Global Environmental Fund) and the Ministry of construction of Uzbekistan to promote and build energy-efficient and low-carbon country houses and rural settlements.

Work in this direction has been successfully carried out from 2017 to the present day, and the first high-quality results have determined a positive direction for the entire project.

Work on this area was initially carried out on the basis of the decision of the president of the Republic of Uzbekistan dated October 21, 2016 “on the program for the construction of affordable housing on model projects updated in rural areas in 2017-2021”, the construction of model and energy-efficient rural housing in rural areas continues to this day.

This in turn gave a strong impetus to the study of the microclimate and climate of the building, studying and solving the energy saving problems that arise in the process of building modern buildings. This explains the wide range of buildings based on various concepts of energy-efficient and environmentally friendly technologies.

The design concepts of modern buildings are based on the idea that the quality of the environment directly affects the quality of our life .

The modern building, in terms of efficiency, is characterized by consumer calculations. One of the main systems of consumer construction indicators is the energy efficiency indicator system of the building.

An energy efficient building is a building within a building that is achieved through the use of innovative solutions that are technically based on energy conservation, are economically expedient, environmentally and socially acceptable, and do not change the usual lifestyle. Energy-efficient homes are becoming the European standard .

The following countries have extensive experience in implementing energy-efficient passive house projects:

energy-saving accommodation was built in Western European countries and, first of all, in Helsinki, Finland, in London, United Kingdom, the energy-saving public building project of the municipality was successfully implemented.

Recently, in connection with the intensification of energy conservation and environmental protection problems, interest in the use of unconventional types of energy has increased, such as solar energy, wind energy and renewable energy sources: solar, wind, etc.have been used by man since ancient times. The solar energy used in the design of modern buildings - a passive house and a solar House, has a significant effect on reducing energy consumption from traditional sources - heating and cooling devices.

Separate passive building features are as follows:

compactness and good insulation of the outer surrounding parts of the building, 2-3 times higher than the normative indicators of thermal conductivity;

forced pasting of the southern part of the building and passive use of solar energy, taking into account the peculiarities of the shade;

at least 0.8 m.Energy-saving windows with thermal conductivity of window structures with °C/W;

air permeability, which can flow air through closed connections, does not exceed 0.6 rooms per hour;

The heat carrier used is the thermal mass Passive House, represented by three main types: stones, water and eutectic salts (with variations). A distinctive feature of heat storage materials is that they have a high thermal inertia.

Thermal inertia is the ability of materials or environments to absorb heat and hold it until it heats up. If the ambient temperature drops, the accumulated heat enters the environment and the materials themselves or the environment are cooled. But changing the ambient temperature or cooling will take some time. Solar energy inside the house, from other surfaces illuminated by sunlight, can be transferred to the surface of the mass, where thermal energy accumulates due to reflection and thermal radiation. Try to place the thermal mass on all surfaces illuminated by the sun. When materials that store heat from solar energy are absorbed, an increase in temperature is observed on the surface of the materials. The

energy absorbed by the surface is transferred to the material through thermal conductivity.

The absorbency depends on the surfaces of the heat storage materials: The place where the thermal mass is exposed to direct solar radiation should have a large volume without being excessively thick, so thin heat-collecting plates are more efficient than thick ones.

The most effective thickness of the heat-accumulating plate is 100 mm, and the thickness exceeds 150 mm is meaningless. The most effective thickness for Wood is 25 mm. The passive floor of the House should be dark in color, because the dark color, absorbs the sun's rays, but does not reflect it, and makes the floor warmer and easier to clean.

The thermal mass of walls and ceilings should be light, since the dark wall heats up quickly, an air flow of thermosiphon is formed, which leads to overheating of the room.

Experts from the International Energy Agency estimated that by 2050, the widespread introduction of energy-efficient building technologies would lead to carbon dioxide emissions of 2 billion. allows a reduction in metric tons.

The construction of energy-efficient housing provides positivity both constructively and economically. For this reason, measures for the construction of energy-efficient housing in all regions of our country are being carried out on a large scale.

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THE NATIONAL PROSPECTS FOR INCREASING INNOVATIVE APPROACHES TO IMPROVING BUILDING ENERGY EFFICIENCY

Abstract: *This article explores the critical environmental challenges posed by increasing global energy consumption driven by population growth and economic development. It highlights the importance of energy conservation and efficiency improvements in mitigating issues such as ozone depletion, atmospheric pollution, and ecological imbalance. The discussion covers recent innovations in building materials and engineering systems designed to enhance energy efficiency, including ecological considerations and advanced technologies like insulation, efficient ventilation, and smart energy assessment methods. The article reviews Uzbekistan's national initiatives—such as compliance with the Paris Agreement, government regulations, and pilot projects on energy-efficient housing—including the construction of low-carbon rural houses with thermal insulation and renewable energy integrations like photovoltaic panels. The overall focus underscores the vital role of modern, energy-efficient construction practices in promoting sustainable development and reducing environmental impacts.*

Key word: *ozone layer, decay, atmosphere, acid, ecological , energy efficient, aerated concrete blocks, isitish for a year, statistical analytical calculations, energy consumption, environmental indicators, engineering systems, model modeling.*

As is known, the growth of the population on Earth and economic development lead to increased consumption of energy resources, higher demand and prices for them. At the same time, this situation results in the depletion of the ozone layer, pollution of the atmosphere with acidic residues, the formation of secondary chemical reactions in all layers of the biosphere, and the emergence of toxic substances; pollution of oceans, surface waters of land reservoirs, and groundwater; disruption of global and regional ecological balance, and other global environmental problems. Therefore, the importance of energy conservation and efficiency is continuously increasing. Countries are approaching work in this area with different strategies and methods. Some changes are ignored, while others are successfully implemented in production. Similar situations occurred in the past with energy-saving window profiles, which are now widely used in construction. Sometimes, these profiles are still installed in factory-made panels, which can lead to improper installation and, consequently, heat loss.

Interestingly, in recent years, the idea of considering ecological indicators in the process of evaluating building energy efficiency has been discussed. For example, many companies are replacing lead stabilizers in window profiles with safer materials. Materials used in construction play a crucial role in increasing energy efficiency. For instance, modern foam concrete blocks allow for the very

precise joining of elements, which reduces heat loss through combined compounds. Additionally, a special adhesive has recently been introduced, which minimizes any heat loss during application. In many cases, this loss is reduced to zero.

Innovative changes often affect the engineering systems of buildings as well, primarily ventilation and heating systems. However, recently, lifts are also being evaluated for energy efficiency, as it has been proven that energy losses in such equipment can reach 15%. Experts recommend assessing lifts after installation in the building, rather than during manufacturing, to ensure data accuracy.

I would also like to emphasize that ideas related to energy efficiency are very popular. If we talk about the residential sector, modern apartments built on advanced technology are in high demand among buyers. Accordingly, integrated technologies aimed at improving energy efficiency are widely applied and are anticipated to become a priority in government construction policies.

An energy-efficient house is a building that combines minimal energy consumption with comfortable microclimate conditions. Such houses can save up to 90% of energy.

The annual heating requirement for an energy-efficient house can be less than 15 kVt per square meter. For example, the most common design of a private house today (reinforced concrete foundation, "warm floor" system without insulation, cement-plastered 1.5-brick walls, standard metal-plastic windows, roof insulation of 150 mm, and unventilated heating) consumes about 110-130 kVt/year per square meter for heating, including heat loss and ventilation.

Buildings constructed according to modern energy efficiency standards can save 40-70% of utility bills. Large amounts of energy and resources are also conserved. At the same time, the temperature, overall microclimate, and humidity levels of air are maintained at more favorable levels than usual, which can be controlled by the homeowner.

Today, the four most popular methods for evaluating building energy efficiency are as follows:

Short-term measurement method: This involves one or two readings of modernized engineering equipment during a single measurement session. The readings of other systems are analyzed based on general statistical data. Results compare the new and old models to determine the building’s energy efficiency class.

Continuous measurement method: Here, the engineer takes regular readings of the modernized equipment's performance over a certain period. The readings of older systems are analyzed similarly, helping identify deficiencies and optimize system improvements.

Analysis of equipment readings inside the building: Usually a long-term process involving continuous recording of all equipment usage, allowing for analytical conclusions and issuance of an energy efficiency certificate.

Calculation and experimental method: A modern approach based on computer simulations and modeling of the building’s energy profile; these analyses are typically performed for the entire building.

In our country, activities in this direction are also being carried out at a high level. For example, more than three years have passed since the signing of the Paris Agreement on climate change. This international document was signed almost simultaneously with the approval of a joint project between the Government of Uzbekistan, the State Energy Committee, and the Ministry of Construction for promoting and constructing energy-efficient and low-carbon rural houses and settlements. Work in this area has been successfully ongoing since 2017, and the initial high-quality results have set a positive direction for the entire project.

In accordance with the Decree No. 5577 issued by the President on November 14, 2018, titled "On Improving State Regulation in the Construction Sector," all residential construction under the "Affordable Housing for Rural Population" state program must adhere to new prototype projects developed within the project to ensure energy efficiency. By 2019, their number increased to over 12,000, and these structures primarily feature additional thermal insulation made from mineral wool (basalt fiber) that retains heat in winter and stays cool in summer, reducing energy consumption by about 30%.

Additionally, within the framework of our project, trials of green mortgage schemes were conducted in five regions of the country (Samarqand, Surxondaryo, Fergana, Khorezm, and Bukhara) to attract private investments into construction. The one-story, three-room houses are notable not only for external wall insulation but also for the installation of photovoltaic panels with a capacity of 300 Watts, as well as solar-powered water heaters with a capacity of 200 liters.

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GLUKOAMILAZANING XUSUSIYATLARI, OLINISHI VA QO'LLANILISHI

Annotatsiya: *Glyukoamilazadan kraxmalni gidrolizlashda hamda, kraxmal saqlovchi substratlardan qimmatli mahsulotlar: etil spirti, qandli qiyom va pivo ishlab chiqarishda foydalaniladi. Shuningdek pivo tayyorlash sanoatida pivodan dekstrin qoldig'ini tozalash uchun ishlatiladi. Kraxmalning fermentativ gidrolizi natijasida hosil bo'lgan glyukoza miqdori glyukozaoksidaza va peroksidaza fermentlari yordamida aniqlanadi. Glyukozaoksidaza fermenti +-D glyukozaning aerob sharoitda glyukonik kislota va vodorod peroksidgacha oksidlanishini katalizlaydi.*

Kalit so'zlar: *Ferment, oqsil, kraxmal, sintez, kultura, Asperigillus, farmatsevtika, gidroliz, produsent, kraxmal, amilaza, amilopektin, glukoamilaza.*

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PROPERTIES, PRODUCTION AND APPLICATION OF GLUCOAMYLASE

Abstract: *Glucoamylase is used for starch hydrolysis, as well as in the production of valuable products from starch-containing substrates: ethyl alcohol, sugar syrup, and beer. It is also used in the brewing industry to remove dextrin residue from beer. The amount of glucose formed as a result of enzymatic hydrolysis of starch is determined using glucose oxidase and peroxidase enzymes. The enzyme glucose oxidase catalyzes the oxidation of β-D-glucose to gluconic acid and hydrogen peroxide under aerobic conditions.*

Keywords: *Enzyme, protein, starch, synthesis, culture, Aspergillus, pharmaceuticals, hydrolysis, producer, amylase, amylopectin, glucoamylase.*

Glyukoamilaza – (1,4 –α–D– glyukan– glyukanogidrolaza) asosan zamburug'larda keng o'rganilgan. U termik barqaror va kislota turg'unligiga ega. Aspergillus niger zamburug'ida uning molekulyar massasi 100 000 dalton atrofida, bo'lishi hamda ikkita glikoproteinlardan iboratligi o'rganilgan. Demak, bu fermentning xususiyatlari bir-biridan farq qiladigan ikkita formasi mavjud. Glyukoamilaza kraxmaldagi α – 1.4 va α- 1.6 glikozidli bog'larini gidrolizini

katalizlaydi. Bu ferment amiloza amilopektinning qaytarilmaydigan uchlaridan glyukoza molekulalarini ketma ket ajratib turadi. Glyukoamilaza yuqori molekulyar og‘irlikdagi substratlarni asta sekin gidrolizlaydi. Substratlarning gidrolizlanish darajasi va reaksiya muhitida glyukoza konsentratsiyasi ortishi bilan glyukoamilaza transferaza faolligini namoyon qilaboshlaydi, natijada izomaltoza pannoza,izomaltotrioza va boshqa reatsiya mahsulotlari hosil bo‘ladi. Natijada glyukoza chiqishi kamayadi. Reaksiya muhitidan glyukoza ajratilganda glyukoamilazaning transferaza faolligi pasayadi va kraxmal shu ferment yordamida glyukozagacha butunlay gidrolizlanishi mumkin.

Ko‘pchilik amilolitik fermentlar va ferment preparatlari o‘z faolliklarini ularni kultura suyuqligidan ajratib olishda, tozalashda, saqlash va ishlab chiqarishda qo‘llash jarayonlarida yo‘qotadi. Shu sababli, ularni biotexnologik jarayonlarda qo‘llashdan oldin turg‘unlashtirish kerak bo‘ladi. Umuman olganda, fermentlar muxandisligida fermentlarni turg‘unlashtirish asosiy muammo hisoblanadi.Shu sababli, so‘nggi yillar davomida shu muammo yechimiga qaratilgan tadqiqotlar katta ulushni tashkil etdib, nazariy va amaliy jihatdan qator muvaffaqiyatlarga erishildi. Shu bilan birga, fermentlar turg‘unligining asosiy sababi issiqlik ta’siri, ingibitorlar va pH muhitdir.

Kulturalarni qattiq ozuqa muhitida o‘stirish natijasida uning tarkibida quruq moddalarning miqdori kamayib, SO2 va suvga aylanadi. Shu sababli, agarda mikroorganizmni o‘stirish yopiq idishlarda (kolba, maxsus kyuvetalar va h.k.) olib borilsa, bug‘lanish natijasida namlikning ortishi kuzatiladi. Agarda o‘stirish jarayoni ochiq idishlarda olib borilsa, kulturani va ozuqa muhitining qurib qolishi va hosil bo‘lgan bo‘lgan mahsulot faolligi kamayishini ko‘rish mumkin. Har bir o‘stirilayotgan produsentning fiziologik xususiyatlariga, ozuqa muhit tarkibi va boshqa omillarga bog‘liq bo‘lib, har bir omil tadqiqot yo‘li bilan aniqlanadi. O‘sayotgan kulturani havo bilan ta’minlanishi va namlik darajasining mo‘tadilligi ko‘pincha o‘stirish usuli va ferment produsentlarining fiziologiyasi bilan belgilanadi. Bu jarayon o‘z oldiga asosan uch maqsadni qo‘yadi:

1.O‘sayotgan mikroorganizmlarni o‘sish va rivojlanishi uchun zarur bo‘lgan kislorod bilan ta’minlash;

2.Gaz ko‘rinishidagi moddalar bilan ifloslangan havoni chiqarib tashlash;

3.Mikroorganizmlarning o‘sish jarayonida hosil bo‘ladigan issiqlikni chiqarib yuborish.

Mikroorganizmlarni qattiq ozuqa muhitida o‘stirishda vujudga kelgan issiqlikni chiqarish masalasi katta ahamiyatga ega. Shuning uchun, mikroskopik zamburug‘larni o‘stirishda ularning o‘sish bosqichlariga katta e’tibor berish kerak, chunki aynan shu guruh mikroorganizmlar qattiq ozuqa muhiti sirtida o‘stiriladi.

Birinchi bosqich - zamburug‘ sporasi yoki konidiyalarini o‘sishi va rivojlanishidir. Uning muddati 10-12 soatga cho‘ziladi. Bu bosqich aytarli issiqlik ajralishi bilan kuzatilmaydi va ozuqa muhit komponentlari o‘zgarmaydi.

Ikkinchi bosqich -ozuqa muhiti sirtida po‘panak hosil bo‘lishi bilan boradigan mitseliylarning faol o‘sish bosqichi. U odatda 12-40 soat va shu bilan birga ozuqa muhitidagi moddalarni ko‘p miqdorda iste’mol qilishi, isssiqlik, is gazi

va suv ajratishi bilan davom etadi. Bunda, mikroorganizm ozuqani mitseliylari bilan to‘liq o‘rab oladi va aynan mana shu bosqichida ko‘p miqdorda issiqlik ajraladi. Bu esa, umumiy ajraladigan issiqlikning 75-80% ini tashkil qiladi. 1 t. kultura bir soat davomida faol o‘sish bosqichida 7,6 m3 ga yaqin kislorodni o‘zlashtiradi yoki havoga bo‘lgan nisbatda esa 36,5 m3 ni o‘zlashtiradi. Zamburug‘larni mo‘tadil o‘sishi umumiy havoning sarfi o‘rta xisobda 1 t. kultura uchun 600-650 m3 ni tashkil qiladi.

Uchinchi bosqich - kulturani morfologik va biokimyoviy o‘zgarishi kuzatiladi, ya’ni bunda mikroorganizmlar konidiylarni va ikkilamchi metabolitlarni hosil qiladilar. Ushbu bosqichda mikroorganizmlar hujayra tashqarisiga chiqariluvchi fermentlarni hosil qiladi. Bunda o‘stirish xonalarida haroratni 3-40S ga tushirish va havo almashtirishni 3-5 martaga kamaytirish zarur. Mikroorganizmlarni suyuq ozuqa muhitlarida o‘stirish davomida ham havo bilan ta’minlashga muxim etibor qaratish lozim. Masalan, bir kulturada har xil aeratsiya sharoitlarida bir xil fermentni, har xil xususiyati bilan hosil qilishi mumkin. Umuman olganda mikroorganizmni o‘stirish jarayonida ularni havo bilan ta’minlash va ferment hosil bo‘lishini tezlashtiradi. O‘stirish davomiyligi ko‘pincha produsentning fiziologik xususiyatiga bog‘liq bo‘ladi. Masalan: Asp awamori uchun esa 144 soatni tashkil etsa, Asp niger uchun 168 soatni tashkil etadi.

Foydalanilgan adabiyotlar:

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BIOKATALIZATORLAR- FERMENTLARNING OLINISH MANBALARI

Annotatsiya: *Ma’lumki, qadim zamonlardan insonlar biologik katolizatorlarni bijg‘ish jarayonlari qatorida foydalanib kelishgan, biologik katolizning ilmiy tushunchasi va vazifasi esa fermentlarning keng ko‘lamda ishlatilishidan dalolat beradi. Shuningdek, amilolitik fermentlar qishloq xo‘jaligi, yengil va kimyo sanoati, farmasevtika, amaliy tibbiyot va hakozalarda ishlatiladi. Fermentlarning manbai turli hayvonlar, o‘simlik to‘qimalari, mikroorganizmlar hisoblanadi. Fermentlarning qaysi biri kerakligi va qaysi birini olish qulayligiga qarab tanlanadi.*

Kalit so‘zlar: *Ferment, oqsil, mikroorganizm, sintez, kultura, nitrogenaza, farmatsevtika, pepsin, tripsin, lipaza, ureaza.*

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BIOCATALYSTS - SOURCES OF ENZYMES

Abstract: *It is well-known that since ancient times, humans have utilized biological catalysts in fermentation processes. The scientific understanding and application of biological catalysis highlight the extensive use of enzymes across various fields. Particularly, amylolytic enzymes find applications in agriculture, the light and chemical industries, pharmaceuticals, practical medicine, and other sectors. Enzymes are sourced from various animal and plant tissues, as well as microorganisms. The selection of enzymes depends on specific requirements and ease of procurement.*

Keywords: *enzyme, protein, microorganism, synthesis, culture, nitrogenase, pharmaceuticals, pepsin, trypsin, lipase, urease.*

Yaqin davrlargacha amaliy maqsadlar uchun o‘simlik va hayvon fermentlaridan foydalanib kelingan. Mikroorganizmlar ham ferment olish uchun juda qulay manba bulib, fermentlarni ajratish va tozalash ko‘p mehnat va harajat talab qiluvchi jaroyondir. Agar ferment preparatlari mikroorganizm kulturasi ko‘rinishida ishlatilsa u tozalanmaydi. Spirt va terini oshlash tarmoqlarida mikroorganizm fermentlaridan foydalanish avzalroqdir, chunki ular tez ko‘payish xususiyatining borligi hamda turli fermentlar sintez qila olishidir.

Ko‘pchilik mikroorganizmlarning muhim xususiyatlaridan biri ular oziqa sifatida har xil chiqindilardan foydalanib o‘sish qobilyatiga egadirlar (sellyuloza, neft uglevodorodlari, metan, metanol va boshqalar). Mikroorganizmlar foydalana oladigan ayrim xom-ashyolar odam va hayvonlar uchun zararlidir. Shunday ekan mikroorganizmlar fermentlar sintez qilish bilan bir qatorda, atrof-muhit muhofazasi uchun ham xizmat qiladilar. Ayrim fermentlarning sintezlanish miqdori mikroorganizmlar hujayrasida juda yuqori bo‘lishi mumkin. Masalan: ribulezobisfosfatkarboksilazaning miqdori ayrim vaqtlarda fotorof bakteriyalar sintez qiladigan suvda eriydigan oqsilning 40- 60% ni tashkil etadi. Yuqorida aytib o‘tilganidek ko‘pchilik mikroorganizmlar katta miqdorda kultural muhitga chiqadigan fermentlar hosil qiladilar. Bular asosan oqsil, kraxmal, sellyuloza, yog‘larni va boshqa suvda erimaydigan moddalarni parchalaydigan gidrolazalardir. Bir qator fermentlar faqat mikroorganizmlardagina uchraydi. Molekula holidagi azotdan ammiak hosil qilishda ishtrok etadigan nitrogenaza fermenti azotni o‘zlashtirish qobilyatiga ega bo‘lgan bakteriyalardagina uchrashi aniqlangan.

Ayrim bakteriyalarning harakterli xususiyatlaridan yana biri ularning anorganik substratlarni: ammiakni, nitritlarni, sulfid va oltingugurtni boshqa birikmalarini va shunga o‘xshash ikki valentli temirnii oksidlash qobilyatidir. Bunday 3 jarayonlarni amalga oshishi mikroorganizmlarda alohida fermentlarning mavjudligi bilan bog‘liqdir. Bir qancha bakteriyalar va suv o‘tlari molekula holidagi vodorod hosil qilishi hamda oksidlanish-qaytarilish reaksiyalarini olib boruvchi degidrogenaza fermentlari saqlashi aniqlangan. Ko‘pchilik bakteriyalar ularga metan, metanol, metillangan aminlarni, uglerod oksidini va boshqa bir xil uglerodli birikmalardan substrat sifatida foydalanib, o‘sish va rivojlanishga yordam beradigan fermentlarni sintezlash qobilyatiga ega.

Atrof muhitni, uni ifloslantiruvchi bir qancha moddalardan tozalash mikroorganizmlar ishlab chiqaradigan fermentlar hisobiga amalga oshiriladi, ular plastmassa, pestitsidlarni va boshqa zaharli murakkab birikmalarni oddiy tarkibiy qismga parchalab yuboradilar. Keng miqdorda qo‘llaniladigan mikroorganizmlar fermenti – gidrolazalar sinfiga kiruvchilardir (glikozidazalar, peptidazalar va boshqalar). Bular glikozid, peptid, efir va ayrim boshqa bog‘larga suv ishtrokida ta’sir qiladi. Gidrolazalar ko‘pincha hujayra tashqarisidagi (ekzogen) fermentlardir. Hujayradan chiqib, ular kultural muhitda to‘planadi. Bu fermentlarni olish hujayra ichidagi (endogen) fermentlarni ajratishga nisbatan qulay va arzondir. Amilolitik fermentlar fermentlar kompleksi tabiatiga ko‘ra eng keng tarqalgan fermentlardan bo‘lib, hayvon, tuban va yuksak o‘simliklar hujayra va to‘qimalarida, hamda mikroorganizmlarda uchraydi. Ular juda katta guruhlarni tashkil etadi, nafaqat kraxmalga gidrolitik ta’sir qiluvchi, balki kraxmal saqlovchi poli- va oligosaxaridlar, polimer substratlarning strukturalariga ham ta’sir qiladi. Amilazaning 3 ta eng mashhur turlari mavjud: alfa-amilaza (KF-3.2.1.1; endo -1.4 α – D –glyukan glyukogidrolaza), betta (KF-3.2.1.2; 1.4 – α – D –glyukan maltogidrolaza) va glyukoamilazalar(KF-3.2.1.3; ekzo -1.4 – α – D –glyukan glyukanogidrolaza).

Glikozidazalar – glikozid bog‘larini gidroliz qiluvchi fermentlardir. Bular ko‘p vaqtlardan beri o‘rganiladi va ishlatiladi. Bu guruhga kraxmalni gidroliz qiluvchi a-amilazani va glyukoamilazalar kiradi. *Bac. Licheniformis* dan olinadigan fermentlar juda yuqori haroratga chidamli va kraxmalni 100 ^{o}C atrofidagi haroratda gidroliz qilish qobilyatiga egadir. Mikroorganizmlarning ekstremal sharoitda taraqqiy qilish qobilyatini, ya’ni past va yuqori haroratda, molekulyar kislorod mavjud bo‘lmaganda, ishqorli va kislotali muhitda, tuzni yuqori konsentratsiyasida o‘sishi ko‘pincha ularning ferment hususiyati bilan izohlanadi. Xulosa qilib shuni aytish mumkinki, mikroorganizmlarda juda yuqori faol fermentativ reaksiya olib borish qobilyati mavjud, mikroorganizmlar, boshqa yo‘llar bilan amalga oshirib bo‘lmaydigan juda ko‘p jarayonlarni o‘zlarining maxsus fermentlari tufayli amalga oshirish imkoniyatiga egalar.

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CONCEPTUAL BASIS FOR DEVELOPING A FOREIGN DIRECT INVESTMENT STRATEGIES

Abstract. *This paper explores the theoretical foundations underpinning the formation of foreign direct investment (fdi) strategies, specifically analyzing how inflation and exchange rate volatility influence investment decisions. Using descriptive statistical analysis of global trends and qualitative exploration of ten economic theories including the eclectic paradigm, internalization theory, and institutional theory the study finds a clear relationship between macroeconomic stability and fdi inflows. High inflation and exchange rate instability consistently discourage investment, as confirmed by global fdi trends. The results underscore the importance of stable macroeconomic conditions and institutional predictability in formulating effective fdi strategies, emphasizing policy actions to enhance investment attractiveness.*

Key words. *Foreign direct investment (fdi), inflation, exchange rate volatility, eclectic paradigm (oli model), internalization theory, institutional theory, macroeconomic stability, investment strategy.*

Introduction

Foreign direct investment (fdi) has emerged as one of the key drivers of globalization, economic growth, and structural transformation. In the modern global economy, the movement of capital across borders facilitates not only the creation of new industries but also the diffusion of advanced technologies, managerial expertise, and global supply chain integration. According to the world investment report 2024, global fdi flows were estimated at $1.37 trillion in 2023, showing a modest recovery despite persistent geopolitical risks and macroeconomic uncertainties (unctad, 2024). [29]however, fdi flows remain 18% below the pre-pandemic average, reflecting structural changes in global investment patterns (unctad, 2024).

[29] UNCTAD. (2024). *World Investment Report 2024: Investing in Sustainable Value Chains*. United Nations Conference on Trade and Development. https://unctad.org/webflyer/world-investment-report-2024

Figure 1. Global fdi inflows, inflation, and exchange rate volatility (2008-2023)

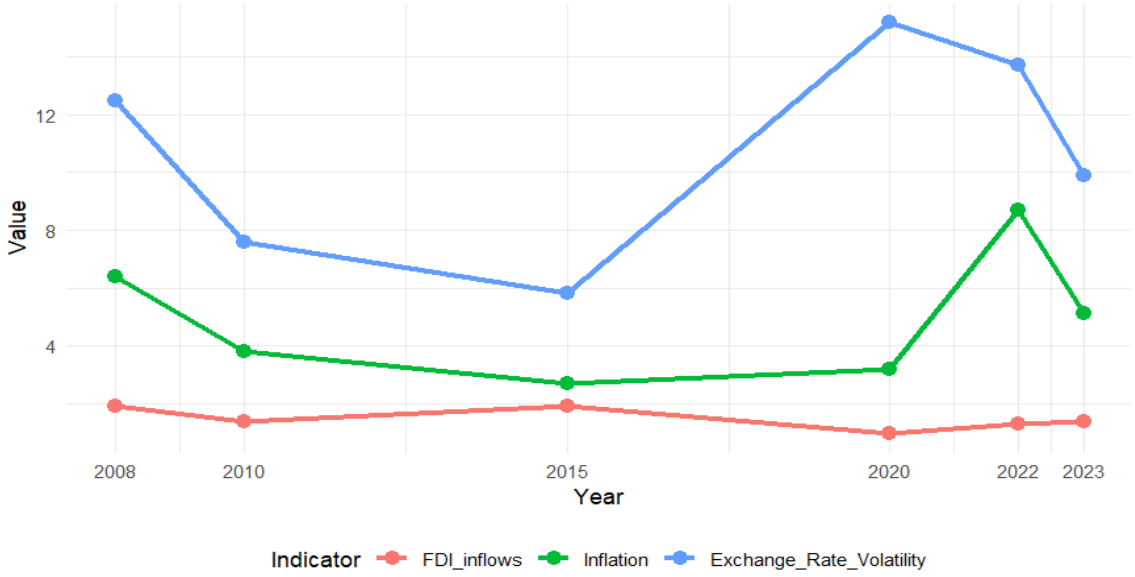

Figure 1 provides descriptive statistics on global Foreign Direct Investment (FDI) inflows, average global inflation rates, and exchange rate volatility across selected years (2008–2023). The data clearly illustrates a negative relationship between macroeconomic instability and global investment levels. Specifically, high inflation years such as 2008 (6.4%) and 2022 (8.7%) correspond to reduced global FDI inflows of $1.89 trillion and $1.29 trillion, respectively, marking notable declines compared to periods of lower inflation. Similarly, periods of increased exchange rate volatility (e.g., 2020: 15.2%) also experienced significantly lower FDI inflows ($0.96 trillion), demonstrating investors' sensitivity to currency fluctuations. Overall, the table underscores that stable inflation and predictable exchange rate conditions positively influence global FDI inflows, reinforcing theoretical claims about the importance of macroeconomic stability in international investment decisions.

Developing and implementing an FDI strategy requires more than policy intent it demands a clear conceptual framework grounded in economic theory. Traditional approaches, such as neoclassical theory, emphasized the movement of capital from capital-rich to capital-poor countries based on marginal returns. Over time, more refined theories emerged, including Dunning's eclectic paradigm (OLI model), which integrates Ownership, Location, and Internalization advantages to explain the motives of multinational enterprises (Dunning, 1980)[30]. Additionally, internalization theory addresses why firms prefer direct investment over licensing by minimizing transaction costs in foreign markets (Buckley & Casson, 1976). Beyond firm-level motivations, macro-level factors also play a critical role in shaping investment attractiveness. Research by the World Bank suggests that

[30] Dunning, J. H. (1980). Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies*, *11*(1), 9–31. https://doi.org/10.1057/palgrave.jibs.8490593

countries with effective legal systems, strong governance, and low levels of corruption can attract 20–40% more FDI compared to those with weak institutions (World Bank, 2023)[31]. Moreover, global surveys conducted by the Organisation for Economic Co-operation and Development (OECD) in 2023 report that 65% of multinational firms rank policy stability and institutional trust as primary considerations when choosing investment destinations (OECD, 2023).[32]

Furthermore, global FDI trends are increasingly influenced by technological shifts, the rise of sustainable finance, and global supply chain reorganization. These changes demand that FDI strategies move beyond traditional incentives and incorporate data-driven, conceptually sound approaches that align with global investor expectations and economic transitions. This article explores the theoretical and conceptual underpinnings of FDI strategy development. It analyzes how classical and contemporary theories — supported by empirical evidence and global trends — can serve as a foundation for building comprehensive, effective, and sustainable FDI strategies. By drawing from established models and integrating up-to-date global data, the study provides a roadmap for decision-makers seeking to enhance national investment competitiveness.

Literature review

In *Foreign Direct Investment: Theory, Evidence and Practice*, Imad A. Moosa offers a comprehensive exploration of the conceptual frameworks, empirical patterns, and policy implications of FDI. The book examines major theories such as internalization, eclectic paradigm, and market imperfections, while also providing statistical evidence and real-world case studies to analyze FDI behavior across countries and sectors. Moosa critiques conventional economic assumptions and highlights the interplay between political risk, economic incentives, and multinational corporate strategies. With a practical orientation, the work bridges the gap between theory and application, making it relevant for academics, policymakers, and investors.[33]

In their 2019 article, Nazmi Zeqiri and Hykmete Bajrami explore the interplay between Foreign Direct Investment (FDI) theories and the role of human capital, particularly in transition economies like Kosovo. The authors argue that human capital is not just a complement to FDI but a prerequisite for attracting the right kind of investment. They review perfect and imperfect market theories of FDI, highlighting that imperfect market theories better account for the role of human capital. The study emphasizes the importance of aligning education systems with FDI strategies to boost productivity, innovation, and long-term economic development.[34]

[31] World Bank. (2023). *World Development Indicators*. https://data.worldbank.org

[32] OECD. (2023). *International Investment Perspectives: Policy Uncertainty and Investment Decisions*. OECD Publishing. https://www.oecd.org/investment/

[33] Moosa, I. A. (2002). *Foreign direct investment: Theory, evidence and practice*. Palgrave Macmillan. https://doi.org/10.1057/9781403907493

[34] Zeqiri, N., & Bajrami, H. (2019). Theories of foreign direct investment (FDI) and the significance of human capital. *International Journal of Business and Management, 7*(1), 11–24. https://doi.org/10.20472/BM.2019.7.1.002

Vintilă Denisia's article, *Foreign Direct Investment Theories: An Overview of the Main FDI Theories*, offers a comprehensive review of the major theories explaining the motivations and behavior behind FDI. The paper outlines key models, including the production cycle theory, exchange rate theory, internalization theory, and the eclectic OLI paradigm by Dunning. Denisia emphasizes that no single unified theory fully captures the complexity of FDI, especially across different economic contexts. The article traces how evolving market conditions, technological changes, and firm-specific advantages shape multinational investment strategies, making FDI a multidimensional and dynamic economic phenomenon.[35]

Methodology

This study adopts a mixed qualitative and descriptive quantitative research approach to analyze the theoretical foundations underpinning Foreign Direct Investment (FDI) strategy formation, emphasizing the role of macroeconomic variables - specifically, inflation and exchange rate volatility.

Firstly, a Descriptive Statistical Analysis was employed to examine global FDI inflows alongside inflation rates and exchange rate volatility. Secondary data from authoritative international sources - including the United Nations Conference on Trade and Development (UNCTAD, 2024), the International Monetary Fund (IMF, 2023), and the World Bank (2023) - were collected for selected years (2008–2023). The data was systematically summarized in tables and visually represented through line graphs to clearly illustrate trends and correlations between macroeconomic variables and global investment flows.

Secondly, the study utilized a Qualitative Theoretical Analysis, focusing on an extensive literature review of ten key economic theories relevant to FDI, inflation, and exchange rates. The theories analyzed include the Neoclassical Investment Theory, Eclectic Paradigm (OLI Model), Internalization Theory, Institutional Theory, Currency Risk Theory, Behavioral Theory of the Firm, Real Options Theory, Product Life Cycle Theory, Portfolio Diversification Theory, and Dynamic Capabilities Theory. Peer-reviewed academic literature, foundational theoretical texts, and scholarly journal articles were critically reviewed and synthesized. This theoretical framework was essential to contextualize, explain, and interpret the empirical patterns identified through the descriptive analysis. The combined methodological approach effectively integrates empirical trends with theoretical perspectives, offering robust insights into how macroeconomic stability shapes FDI strategy formulation. The methodology aligns clearly with the study's objectives, ensuring reliability, validity, and theoretical coherence of the research findings.

Result and discussion

The theoretical analysis, examining ten fundamental economic and strategic theories, offers robust explanations for these observed statistical patterns.

[35] Denisia, V. (2010). Foreign direct investment theories: An overview of the main FDI theories. *European Journal of Interdisciplinary Studies, 2*(2), 104–110.

Neoclassical Investment Theory clearly emphasizes that investors prioritize stable macroeconomic environments due to predictable returns. The Eclectic Paradigm (OLI model) and Internalization Theory strongly reinforce the notion that inflation and exchange rate stability serve as crucial determinants of location and internalization advantages, respectively. Both theories underscore that macroeconomic instability diminishes the attractiveness of investment destinations.

Analyzing the relationship between Foreign Direct Investment (FDI), inflation, and exchange rates necessitates grounding the analysis within diverse theoretical frameworks. Ten influential theories elucidate these complex interactions:

1.1 Neoclassical Investment Theory

Neoclassical investment theory asserts that international capital mobility is driven primarily by the pursuit of higher marginal returns. Under this framework, inflation undermines investor returns by introducing price instability, reducing real profits, and increasing economic uncertainty. Additionally, exchange rate volatility affects expected profits due to currency value fluctuations, further discouraging investment. Thus, from a neoclassical perspective, maintaining stable inflation and predictable exchange rates increases the host country's appeal by improving perceived returns and reducing risk premiums (Solow, 1956).[36]

1.2 Eclectic Paradigm (OLI Model)

Dunning's Eclectic Paradigm (Ownership, Location, Internalization) argues firms will invest abroad when these three conditions simultaneously exist. High inflation rates erode location advantages by increasing operating costs, complicating financial planning, and diminishing purchasing power. Volatile exchange rates similarly undermine locational appeal, elevating financial risk and operational uncertainty. Hence, economic stability strengthens locational advantages, positively influencing investor decisions (Dunning, 1980).[37]

1.3 Internalization Theory

Internalization theory suggests firms internalize foreign operations to minimize transaction costs arising from market imperfections. Inflation raises transaction and operating costs by causing unpredictable price fluctuations, while exchange rate volatility inflates hedging and currency-conversion expenses. In response, firms increase internalization to manage risks directly. Thus, macroeconomic instability often drives firms toward wholly owned subsidiaries, reducing reliance on external markets (Buckley & Casson, 1976).[38]

1.4 Institutional Theory

Institutional theory highlights how robust institutions foster predictable environments favorable to FDI. Inflation and exchange rate instability reflect weak institutional governance and policy unpredictability. Investors interpret stable

[36] Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics, 70*(1), 65–94. https://doi.org/10.2307/1884513

[37] Dunning, J. H. (1980). Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies, 11*(1), 9–31. https://doi.org/10.1057/palgrave.jibs.8490593

[38] Buckley, P. J., & Casson, M. (1976). *The Future of the Multinational Enterprise*. Macmillan.

macroeconomic indicators as signs of effective governance, transparent policymaking, and secure property rights. Hence, economies with stable inflation and exchange rates possess institutional credibility, enhancing investor trust and attracting long-term, high-quality investment (North, 1990).[39]

1.5 Currency Risk Theory

Currency risk theory emphasizes the costs and uncertainties introduced by fluctuating exchange rates. Firms investing abroad face direct financial risks related to foreign currency earnings and profit repatriation. Volatile exchange rates elevate the costs of currency hedging, prompting investors to demand higher returns to offset this risk. Therefore, stable exchange rates considerably lower risk premiums, encouraging foreign investors to commit long-term capital (Shapiro, 1999).[40]

1.6 Behavioral Theory of the Firm

According to the behavioral theory of the firm, managerial decision-making is heavily influenced by risk perception and uncertainty avoidance. Persistent inflation and exchange rate volatility magnify managerial uncertainty, causing firms to delay investment decisions or reduce their foreign exposure altogether. Firms therefore exhibit conservative behavior, choosing investment destinations with stable macroeconomic indicators, and thereby favoring economies with predictable inflation and exchange rate conditions (Cyert & March, 1963).[41]

1.7 Real Options Theory

Real options theory views investment as exercising an option under uncertainty. High inflation and unpredictable exchange rate movements significantly increase economic uncertainty, enhancing the value of delaying investment decisions. Investors opt to "wait and see," postponing investments until macroeconomic stability is restored. Thus, policy stability concerning inflation and exchange rates reduces uncertainty, decreasing the value of waiting and stimulating immediate investment commitments (Dixit & Pindyck, 1994).[42]

1.8 Product Life Cycle Theory

Vernon's product life cycle theory explains FDI as a strategy firms adopt at different product maturity stages. High inflation and exchange rate fluctuations distort competitive advantages related to cost management and pricing strategies. Firms may thus alter their timing, location, and entry modes for international investment based on macroeconomic conditions, strategically shifting production to markets offering stable economic environments. Stable macroeconomic indicators attract firms during the early and growth stages of a product's life cycle (Vernon, 1966).[43]

1.9 Portfolio Diversification Theory

Markowitz's portfolio diversification theory suggests investors diversify international investments to minimize portfolio risk. Inflation and exchange rate

[39] North, D. C. (1990). *Institutions, Institutional Change, and Economic Performance*. Cambridge University Press.
[40] Shapiro, A. C. (1999). *Multinational Financial Management* (6th ed.). Wiley.
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instability heighten risk exposure in specific markets, prompting firms to diversify geographically to balance their risk profile. Thus, stable macroeconomic environments become highly attractive as core investment targets due to their ability to offset risks incurred elsewhere, positively affecting FDI inflows (Markowitz, 1952).[44]

1.10 Dynamic Capabilities Theory

Dynamic capabilities theory argues firms gain competitive advantages by rapidly adapting to external economic changes. Firms possessing dynamic capabilities effectively adjust their strategies in response to inflationary pressures or exchange rate volatility. Those firms strategically manage macroeconomic volatility by restructuring their foreign operations, entry strategies, or hedging practices, thereby maintaining their competitive edge. Economies facilitating adaptive firm behavior through stable macroeconomic policies and predictable environments are better positioned to attract sustainable and dynamic FDI flows (Teece, Pisano, & Shuen, 1997).[45]

Institutional Theory and Currency Risk Theory both further elucidate how stable governance and financial predictability enhance investor confidence. Institutional stability reduces risk premiums demanded by investors, a key factor confirmed by descriptive trends in global FDI. Behavioral Theory and Real Options Theory similarly confirm that macroeconomic stability reduces managerial uncertainty and the perceived value of investment delays, thus promoting timely and robust investment flows.

Additionally, the Product Life Cycle Theory and Portfolio Diversification Theory provide strategic insights, indicating firms adapt their international investment patterns and diversification strategies to align with stable economic conditions. This strategic adaptation is further supported by Dynamic Capabilities Theory, suggesting firms capable of adjusting rapidly to inflation and currency fluctuations maintain strategic advantages and contribute positively to sustainable investment patterns. Ultimately, the synthesis of descriptive and theoretical analyses reveals that maintaining stable inflation rates and predictable exchange rate conditions significantly influences investor decisions, supporting sustainable and robust FDI inflows globally. These results strongly imply that strategic policy-making aimed at macroeconomic stability and institutional predictability constitutes a core element of effective FDI strategy formulation.

CONCLUSION

This study has examined the theoretical foundations underpinning the formation of foreign direct investment (FDI) strategies, with a specific emphasis on the influence of inflation and exchange rate volatility. The analysis, drawing from descriptive statistics and detailed qualitative exploration of ten established economic theories, conclusively demonstrates that macroeconomic stability

[44] Markowitz, H. (1952). Portfolio selection. *The Journal of Finance, 7*(1), 77–91. https://doi.org/10.2307/2975974

[45] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509–533. https://doi.org/10.1002/(sici)1097-0266(199708)18:7<509::aid-smj882>3.0.co;2-z

significantly shapes investor behavior and investment flows globally. Descriptive statistical evidence clearly showed that global FDI inflows decline during periods characterized by high inflation and heightened exchange rate volatility, supporting theoretical propositions presented throughout this analysis. Specifically, theories such as the Eclectic Paradigm (OLI Model), Institutional Theory, and Currency Risk Theory emphasize the critical role of stable macroeconomic environments in enhancing investor confidence and reducing financial risks. Likewise, the Behavioral Theory of the Firm and Real Options Theory indicate that macroeconomic uncertainties lead investors to delay or reconsider investments, further reinforcing the negative impacts of inflationary pressures and currency instability. The study concludes that maintaining predictable inflation rates and stable exchange rate conditions significantly enhances countries' attractiveness as investment destinations. Consequently, policymakers should prioritize institutional reforms aimed at achieving macroeconomic stability and transparency. Effective inflation targeting, clear monetary policies, currency stabilization strategies, and robust governance frameworks are strongly recommended. Implementing these policy measures will bolster investor confidence, reduce perceived risks, and create sustainable environments conducive to long-term foreign direct investment.

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COMPARATIVE STUDY OF ALLEGORICAL DEVICES IN UZBEK AND ENGLISH LANGUAGES

Abstract*:This article presents a comparative analysis of allegorical devices employed in the Uzbek and English languages through a linguoculturological lens. Drawing upon literary, historical, and linguistic frameworks, the study investigates the structural, semantic, and cultural functions of allegory as a stylistic and cognitive phenomenon. Particular attention is paid to the roles of metaphor, personification, and symbolic imagery in expressing abstract concepts within each language's literary tradition. By examining both classical and modern sources, the paper elucidates how allegory serves as a medium for encoding national identity, moral values, and collective memory. The research highlights both the universal cognitive mechanisms underpinning allegory and the culturally specific expressions shaped by folklore, political discourse, and artistic convention.*

Keywords*: allegory, metaphor, linguoculturology, figurative language, Uzbek literature, English literature, symbolism, cognitive linguistics, national identity, cross-cultural analysis*

Introduction

In global linguistics, identifying and defining the role of various domain-specific units within the lexical system, and approaching them from a linguoculturological perspective, has become one of the most pressing issues in the field. In this regard, the linguistic analysis of allegorical devices in each language plays a significant role in uncovering their linguoculturological characteristics. Consequently, a comprehensive study of the structural-semantic, cognitive, linguoculturological, and pragmatic features of allegory has gained particular importance. Comparative analysis of allegorical units across languages, semantic classification of paremiological expressions, allegorical tropes, and artistic imagery specific to each language, along with examination of their structural composition, is of critical scholarly relevance. Furthermore, the artistic and expressive functions of allegorical units are being actively investigated by scholars within modern frameworks such as linguoculturology, cognitive linguistics, and pragmalinguistics.

Materials and methods

“Allegory is a form of symbol in which a concrete image or symbolic expression (obraz) is used to represent an abstract concept or idea; that is, it is a method of conveying an unclear or intangible concept through features characteristic of commonly known objects or phenomena” [10.1]

When we look back at the history of allegory, we find that numerous scholars have contributed their interpretations of this concept. The notion of allegory can be

traced back to the 6th century BCE. The expression "first allegorist" was initially attributed to Homer due to the allegorical richness of his interpretations. In addition, Theagenes of Rhegium (whom Porphyry refers to as the “first allegorist”) and Pherecydes of Syros are believed to have introduced some of the earliest forms of allegorical thought.

German stylisticians E.G. Riesel and Ye. Schendels viewed allegory as a subtype of metaphor. In their classification of figurative devices, they grouped them as follows:

1. Metaphor (including pure metaphor, personification, allegory, symbol, synesthesia),
2. Metonymy (including synecdoche, pars pro toto),
3. Epithet (including tautological, descriptive, simple, and compound epithets),
4. Periphrasis (including irony and litotes),
5. Simile.

The Roman philosopher and statesman Cicero (106–43 BCE), in his renowned treatise *De Oratore* (*On the Orator*), offers the following definition of allegory: “a repeated use of metaphor is what the Greeks call allegory.” According to this definition, Cicero regarded allegory as a rhetorical construct composed of multiple metaphors. From this perspective, metaphor and allegory appear as closely related and interdependent expressive devices.

In linguistic dictionaries, allegory and metaphor (majoz) are often viewed as synonymous expressive devices. Allegory is defined as “the representation of an idea or concept through concrete imagery.” [1.29] Unlike a symbol, which can possess multiple meanings, allegory is typically characterized by a single, fixed interpretation and exists independently from the image itself. Thus, while both allegory and metaphor serve to convey abstract notions through figurative means, allegory is distinct in its unambiguous, context-bound semantic framework [1.478]

Research and discussion

The comparative analysis of allegorical devices in Uzbek and English languages provides valuable insights into how different linguistic and cultural systems conceptualize abstract ideas through figurative expression. Allegory, as a stylistic and cognitive phenomenon, manifests uniquely in each language, reflecting the respective nation’s worldview, historical experiences, and cultural codes.

In Uzbek, allegorical imagery is deeply rooted in folklore, classical literature, and oral traditions, where animals, natural elements, and symbolic objects are frequently employed to convey moral, social, or philosophical messages. For example, animals such as the fox, wolf, and owl are used to symbolize cunning, aggression, or wisdom, respectively, in proverbs, tales, and didactic poetry. These allegorical figures often reflect collective values, spiritual beliefs, and communal behavior patterns.

In English, allegory has been widely employed in both religious and political literature, particularly during the Renaissance and Enlightenment periods. Works such as George Orwell’s *Animal Farm* use allegory as a narrative device to critique

ideological structures and power dynamics. In English discourse, allegory often functions as a tool for indirect critique and philosophical reflection, with symbols and metaphors serving to encode complex social and psychological realities.

Despite the differences, both languages utilize allegory to bridge the abstract and the concrete, the visible and the invisible. In both cultures, allegory serves not only as a rhetorical ornament but also as a means of encoding deep-seated cultural narratives and moral frameworks.

The comparative study reveals that while the symbolic referents may vary across cultures (e.g., "dasturxon" in Uzbek vs. "table" in English, or "wolf" representing greed in both traditions), the underlying cognitive mechanisms—such as metaphorical mapping and associative thinking—remain largely universal. Thus, this investigation underscores the significance of allegory as a linguocultural phenomenon, facilitating a deeper understanding of national identity, social consciousness, and interlingual parallels.

Research findings indicate that the artistic device known in the East as *"intoq"* and in the West as *"allegory"* has served as a central object of scholarly inquiry for many centuries. In classical Eastern literary traditions, personification and allegory are often viewed as stylistically equivalent tropes, both aimed at expressing abstract ideas through vivid, concrete imagery. In the fields of Uzbek linguistics and literary studies, allegory is understood as a means of figurative expression and symbolic representation—a stylistic technique used to depict abstract concepts or ideas through specific objects, events, or phenomena.

For example, in Uzbek literary culture, the word *to'ti* (parrot) may symbolize a talkative child or loquacious woman, *bulbul* (nightingale) evokes a melodious voice, while animals such as the *wolf* or *fox* often stand in for deceitful or malevolent individuals in folktales. Conversely, creatures like the *hawk*, *tortoise*, or *sheep* may personify wisdom, age, or moral uprightness. In these instances, the connection between the linguistic sign and the image is founded on culturally embedded associative meaning, resulting in a harmonious interplay between word and symbol.

During the medieval period, allegory was widely employed in both prose and poetic forms across Eastern literature. It played a pivotal role in shaping artistic imagery and thematic structure. Similarly, in Western literature—particularly within the stylistic frameworks of Baroque and Classicism—allegorical representation became one of the principal devices for conveying philosophical, religious, or didactic ideas. In these contexts, allegorical figures were meticulously crafted to align with the prevailing aesthetic and semantic orientations of their time.

Metaphor (majoz) or allegory may be broadly defined as a literary method or mode of imagery whereby abstract notions or reflections are expressed through concrete images. Metaphor operates by establishing a meaningful link between two seemingly unrelated concepts, thereby generating a new, figurative meaning. This method is used not only to convey moral or spiritual values such as truth, love, faith, and conscience, but also to depict a variety of events, mythological figures, character types, or specific individuals.

In classical Uzbek literature, metaphor holds a significant position and manifests in two primary dimensions: 1) the figurative-concrete, and 2) the conceptual-semantic. Among these, the semantic dimension is paramount, as the metaphorical image derives its interpretive depth from an underlying conceptual framework. For this reason, metaphorical imagery—unlike simple literary imagery—requires specialized analysis and contextual interpretation to fully uncover its meaning. As a stylistic instrument, metaphor enhances the aesthetic and emotional resonance of any literary text and occupies a prominent place in Eastern literary traditions, appearing in diverse and richly varied forms.

Conclusion

The comparative exploration of allegorical devices in Uzbek and English languages demonstrates that while the symbolic expressions and cultural references may differ, the fundamental cognitive and communicative functions of allegory are largely shared. In both traditions, allegory functions as a powerful stylistic tool for expressing complex ideas in accessible, image-based forms. In Uzbek literature, allegory is deeply rooted in oral tradition and classical poetry, emphasizing communal values and moral instruction. In contrast, English allegorical texts often reflect philosophical and ideological critique, particularly in political and religious contexts. Despite these distinctions, allegorical expression in both cultures serves to bridge the abstract and the concrete, the collective and the individual, ultimately revealing the intricate interplay between language, culture, and thought. The study affirms the enduring relevance of allegory as a medium of conceptual representation and cultural expression.

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IMMUNOLOGICAL TESTS AND PATHOPHYSIOLOGICAL CHANGES IN AUTOIMMUNE DISEASES

Abstract: *This scientific paper provides a detailed analysis of the characteristics, diagnosis, and pathophysiological mechanisms of autoimmune diseases. Autoimmune diseases are described as conditions in which the immune system mistakenly targets and attacks the body's own cells, perceiving them as foreign. These diseases include conditions like rheumatoid arthritis, systemic lupus erythematosus, scleroderma, myasthenia gravis, and others. Each of these diseases requires specific immunological tests and induces distinct pathological changes. For example, in systemic lupus erythematosus, immune complexes cause inflammation in the skin, joints, and kidneys, while in rheumatoid arthritis, inflammation occurs in the synovial membranes, leading to joint deformities.*

Keywords*: Autoimmune diseases, Immune system, Immunological tests, Antinuclear antibodies, Rheumatoid factor, Anti-dsDNA antibodies, Thyroiditis, GAD antibodies, Scleroderma.*

Introduction

Autoimmune diseases are chronic and often progressive pathological conditions in which the body’s immune system mistakenly targets its own healthy tissues. Under normal physiological conditions, the immune system is capable of distinguishing between self and non-self antigens, thereby maintaining immune tolerance. However, in autoimmune diseases, this mechanism becomes impaired, leading to an inappropriate immune response against the body’s own cells and tissues. The pathophysiological basis of autoimmune diseases involves persistent inflammation, cellular destruction, necrosis, and fibrosis. These processes are mediated by autoantibodies or autoreactive lymphocytes that directly or indirectly damage specific organs or tissues. As a result, the structural and functional integrity of the affected organs is compromised. For example, autoimmune inflammation in kidney tissues can lead to glomerulonephritis, while in cardiac muscle it may result in myocarditis.

The development of autoimmune diseases is multifactorial, involving genetic susceptibility, environmental triggers such as viral or bacterial infections, exposure to toxins, and dysregulation of immune checkpoints. Early identification and proper classification of these diseases are essential for effective treatment and

management. For this reason, modern immunological testing plays a critical role in clinical practice. Through these tests, clinicians can assess immune system activity, detect tissue-specific autoantibodies, measure the degree of inflammation, and monitor the response to therapy. Immunological analyses not only aid in confirming diagnoses but also help in evaluating disease severity and providing prognostic insights. The relevance of this topic lies in the increasing prevalence of autoimmune disorders worldwide and the complexity involved in their diagnosis and treatment. Therefore, this study aims to provide a comprehensive analysis of the principal immunological tests used in autoimmune diseases, their clinical significance, and the specific pathophysiological alterations associated with these conditions.

Literature review and method

Autoimmune diseases are disorders characterized by the immune system's failure to distinguish between self and non-self components, resulting in an immune attack against the body's own tissues. This loss of immunological tolerance leads to chronic inflammation and gradual destruction of affected organs. These diseases are typically long-term, progressive, and can affect any organ or tissue in the body. The onset can be systemic, involving multiple organs, or organ-specific, targeting a particular tissue. Symptoms often fluctuate, with periods of remission and flare-ups. Autoimmune diseases include conditions such as systemic lupus erythematosus, rheumatoid arthritis, autoimmune thyroiditis, and type 1 diabetes mellitus. The exact cause remains unclear, but both genetic and environmental factors are involved. Autoimmune disorders are more prevalent in women and are known for their heterogeneity in clinical presentation. The impact on quality of life and healthcare systems underscores the importance of early diagnosis and appropriate management.

The etiology of autoimmune diseases is complex and multifactorial. Genetic predisposition plays a central role, with certain human leukocyte antigen (HLA) haplotypes being strongly associated with specific diseases. Environmental triggers, such as viral and bacterial infections, may induce molecular mimicry, leading to the activation of autoreactive lymphocytes. Additionally, hormonal influences and exposure to certain drugs and toxins can modulate immune responses. From a pathogenic standpoint, the breakdown of central and peripheral tolerance is a key event. Central tolerance occurs in the thymus and bone marrow, where self-reactive lymphocytes are eliminated. Failure of this mechanism results in the release of autoreactive T and B lymphocytes into circulation. Peripheral tolerance mechanisms, including regulatory T cells and immune checkpoint proteins, also act to suppress inappropriate immune responses. When these systems are impaired, autoantibody production and cytotoxic immune responses ensue, resulting in tissue damage and inflammation.

Disease Name	Immunological Tests	Pathophysiological Changes
Systemic Lupus Erythematosus (SLE)	ANA, anti-dsDNA, anti-Smith antibodies	Immune complexes cause inflammation in kidneys, skin, and joints
Rheumatoid Arthritis (RA)	Rheumatoid Factor (RF), Anti-CCP antibodies	Synovial membrane inflammation, joint deformities and erosions
Hashimoto's Thyroiditis	Anti-TPO, Anti-thyroglobulin (Anti-Tg) antibodies	Atrophy of the thyroid gland, hypothyroidism
Type 1 Diabetes	Anti-GAD, Anti-insulin, Anti-IA-2 antibodies	Destruction of pancreatic beta cells, insulin deficiency
Multiple Sclerosis (MS)	Oligoclonal bands in CSF, Anti-MBP (myelin basic protein)	Demyelination in the CNS, loss of neurological function

Autoimmune diseases, immunological tests, and pathophysiological changes (1 table)

Autoimmune diseases are broadly categorized into two groups: systemic and organ-specific. Systemic autoimmune diseases affect multiple organ systems and are characterized by widespread inflammation and immune complex deposition. Examples include systemic lupus erythematosus and systemic sclerosis. Organ-specific autoimmune diseases, on the other hand, primarily target a single organ. For instance, type 1 diabetes mellitus primarily affects the pancreas, while Hashimoto's thyroiditis involves the thyroid gland. Another classification approach considers the predominant immune mechanism-whether the disease is mediated by autoantibodies, autoreactive T cells, or immune complexes. Mixed-type autoimmune diseases involve both humoral and cellular immunity. Classification is important for understanding disease progression, choosing diagnostic tests, and tailoring treatment strategies. It also helps predict complications and prognosis. Each class of autoimmune diseases exhibits distinct immunopathological features and laboratory findings that guide diagnosis and management.

Immunological tests play a crucial role in identifying and monitoring autoimmune diseases. These tests detect autoantibodies, measure cytokine levels, evaluate complement activity, and assess immune cell functions. Enzyme-linked immunosorbent assays (ELISA), indirect immunofluorescence, immunoblotting, and flow cytometry are commonly used laboratory techniques. The antinuclear antibody test is often the first screening test for systemic autoimmune diseases. Specific autoantibodies, such as anti-double-stranded DNA, anti-Smith, anti-thyroid peroxidase, and anti-glutamic acid decarboxylase, aid in diagnosis and disease classification. Rheumatoid factor and anti-cyclic citrullinated peptide

antibodies are essential in diagnosing rheumatoid arthritis. The complement system components (C3 and C4) are also measured to assess disease activity. In some cases, human leukocyte antigen typing is used to evaluate genetic susceptibility. These tests are not only diagnostic but also prognostic, guiding clinicians in treatment selection and monitoring therapeutic efficacy.

Pathophysiological alterations in autoimmune diseases are a consequence of persistent immune-mediated inflammation and tissue injury. In systemic lupus erythematosus, immune complex deposition leads to glomerulonephritis and vasculitis. In rheumatoid arthritis, chronic synovial inflammation causes joint destruction and deformity. In type 1 diabetes mellitus, autoimmune destruction of pancreatic beta cells results in insulin deficiency. These structural and functional changes are often irreversible if not treated promptly. Chronic inflammation induces cellular infiltration, edema, necrosis, and ultimately fibrosis. Organ-specific changes are often confirmed by biopsy, which may reveal lymphocytic infiltration and tissue atrophy. Neuroautoimmune conditions such as multiple sclerosis show demyelination in the central nervous system. Inflammatory cytokines such as tumor necrosis factor-alpha and interleukin-6 play a major role in mediating these pathological changes. Understanding these pathophysiological mechanisms is essential for targeting therapies and preventing irreversible organ damage.

Immunological markers are invaluable tools in the clinical management of autoimmune diseases. These biomarkers assist in early detection, diagnosis confirmation, disease activity assessment, and prognosis determination. For instance, high titers of anti-double-stranded DNA antibodies correlate with active disease in systemic lupus erythematosus, while decreased complement levels suggest ongoing immune complex-mediated damage. In autoimmune thyroid disease, the presence of anti-thyroid antibodies supports diagnosis and helps predict disease course. Some markers are disease-specific, while others may be found in multiple autoimmune conditions. Monitoring autoantibody titers and inflammatory markers such as C-reactive protein can help evaluate response to immunosuppressive therapy. Moreover, certain markers are used to stratify patients into risk categories for complications, such as lupus nephritis or vasculitis. The availability and interpretation of these markers require specialized laboratory techniques and clinical expertise, highlighting the need for an interdisciplinary approach.

Discussion

Diagnosing autoimmune diseases can be challenging due to their diverse and often non-specific clinical manifestations. Symptoms such as fatigue, fever, joint pain, and rash are common to many conditions, making differential diagnosis essential. Autoimmune markers may be present in healthy individuals or in other diseases, leading to false positives. Conversely, early-stage patients may not yet show significant laboratory abnormalities. Overlap syndromes, where features of multiple autoimmune diseases coexist, add further complexity. Infections, malignancies, and drug reactions must also be ruled out. Additionally, access to specialized immunological testing may be limited in some healthcare settings.

Physicians must integrate clinical findings with laboratory data and imaging results to arrive at an accurate diagnosis. Misdiagnosis or delayed diagnosis can lead to inappropriate treatment and irreversible complications. Therefore, awareness, experience, and careful evaluation are crucial in managing these patients.

The field of autoimmune diagnostics is rapidly evolving, with ongoing research aimed at identifying more specific, sensitive, and predictive biomarkers. Advances in genomics, proteomics, and metabolomics are enabling the discovery of novel disease-associated molecules. High-throughput screening methods and artificial intelligence are being integrated to improve diagnostic accuracy and speed. Personalized medicine approaches are gaining importance, allowing treatment to be tailored based on individual immunological profiles. Research is also focusing on better understanding of immune tolerance mechanisms and how to restore them therapeutically. Early detection through non-invasive testing, such as saliva or urine-based assays, is another promising area. Additionally, the development of multiplex assays capable of detecting multiple autoantibodies in a single sample will streamline diagnostics. As autoimmune disease prevalence rises globally, continued investment in research and innovation is essential to improve outcomes and reduce healthcare burdens.

The complexity and diversity of autoimmune diseases make them a significant challenge for clinicians and researchers alike. As discussed in earlier sections, autoimmune disorders arise from a breakdown of self-tolerance, resulting in chronic immune-mediated damage to various organs and tissues. While the clinical manifestations of these diseases vary widely, they share common immunopathological features, including persistent inflammation, the presence of autoreactive lymphocytes, and the production of autoantibodies. These features form the foundation for both diagnosis and therapeutic decision-making.

One of the most critical tools in managing autoimmune diseases is the application of immunological diagnostic tests. These tests provide insight into the immune system’s activity and offer evidence of underlying autoimmunity even before overt clinical symptoms develop. For example, the detection of antinuclear antibodies may precede the onset of systemic lupus erythematosus by months or even years. This underscores the importance of early immunological screening, particularly in patients with a family history of autoimmune conditions or those exhibiting vague, non-specific symptoms.

However, despite significant advances in immunodiagnostic technologies, certain limitations remain. False-positive results can lead to misdiagnosis, especially in individuals with transient infections or healthy individuals with naturally occurring autoantibodies. Conversely, false negatives may occur in the early stages of disease or in cases with low antibody titers. This highlights the necessity of interpreting laboratory findings in conjunction with clinical assessment, imaging studies, and histopathological evaluation when necessary.

Pathophysiological changes induced by autoimmune processes are often irreversible if not promptly addressed. Chronic inflammation leads to progressive tissue destruction, fibrosis, and functional decline. These changes are particularly

devastating in vital organs such as the kidneys, central nervous system, and endocrine glands. Therefore, a deeper understanding of the mechanisms driving these pathological alterations is essential for the development of targeted therapies aimed at halting disease progression and restoring immune balance.

The ongoing evolution of diagnostic tools, including multiplex immunoassays, flow cytometric analysis, and next-generation sequencing, holds great promise for improving the accuracy and efficiency of autoimmune disease detection. Furthermore, the integration of biomarkers into disease monitoring protocols enables clinicians to better assess disease activity and modify treatment strategies accordingly. While current immunological tests have significantly improved the ability to diagnose and manage autoimmune diseases, continued research is crucial. Advancements in molecular biology, genetics, and immunotherapy are paving the way for more precise, individualized approaches. A multidisciplinary strategy involving immunologists, rheumatologists, pathologists, and laboratory scientists is essential to overcome the diagnostic and therapeutic challenges posed by these complex disorders.

Conclusion

Autoimmune diseases represent a broad and heterogeneous group of disorders characterized by immune system dysregulation, resulting in the body attacking its own cells and tissues. These conditions pose a growing global health challenge due to their chronic nature, diagnostic complexity, and potential for significant morbidity and mortality. Understanding the underlying immunopathological mechanisms-particularly the loss of self-tolerance, autoreactive lymphocyte activity, and autoantibody production-is critical for early diagnosis, effective treatment, and long-term disease management.

Immunological diagnostic tests have become indispensable tools in identifying autoimmune diseases. Techniques such as enzyme-linked immunosorbent assays, indirect immunofluorescence, and immunoblotting allow for the detection of specific autoantibodies and immune system components, helping clinicians confirm diagnoses and monitor disease activity. However, due to the potential for false positives and negatives, these tests must be interpreted in the context of a patient's clinical presentation, laboratory findings, and imaging results.

Pathophysiological changes in autoimmune diseases are driven by chronic inflammation, leading to tissue damage, functional impairment, and in many cases, irreversible structural changes. The early identification of these changes-particularly through immunological markers-allows for timely therapeutic interventions, which can slow disease progression and improve patient outcomes.

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METHODOLOGY FOR OPTIMIZING TRAINING LOADS OF YOUNG GIRLS' ARTISTIC GYMNASTICS

Annotation: *This in the article Methodology for optimizing training loads for rhythmic gymnasts and To develop a quality such as flexibility among participants in rhythmic gymnastics in order to achieve a high level of sportsmanship. recommendations on given.*

Keywords: *The issue of preparing young rhythmic gymnasts for international competitions requires taking into account all factors of many years of preparation.*

Relevance. The rapid growth of modern sports achievements of young rhythmic gymnasts in the world is determined by the change in the age indicators of the participants. The issue of preparing young rhythmic gymnasts for international competitions requires taking into account all the factors of many years of preparation. One of these factors is the search for effective means and methods that will help develop movement skills and achieve the highest results in the shortest possible time. Therefore, optimizing the training loads of gymnasts in the training group is becoming increasingly relevant.

In rhythmic gymnastics, it is very important to develop such a quality as flexibility among the participants in order to achieve a high level of sportsmanship. The process of developing flexibility was carried out in stages. The number of exercises aimed at developing flexibility was small, but the exercises were used systematically in each training session.

Table 1

the training process and load standards

Stage	Training purpose	Training intensity	Training duration	Recovery time
Preparation stage	Technical the base develop	Average	45-60 minutes	10-15 minutes
Special preparation	Special actions development and strengthening	High	60-90 minutes	15-20 minutes
Competition took stage	To the results directed training	High	90 minutes	20-30 minutes

The following table analysis describes a step-by-step approach to planning a gymnast's training process. This analysis is based on the purpose, intensity, and duration of each phase.

1. Preparatory stage. Purpose . At this stage, the basic technical base of the girls is formed. The focus is on developing coordination of movements, balance, stretching and endurance.

Training intensity. Average loading is given because young athletes new techniques with They meet. Their health and readiness security point of view from the point of view attention with observation need.

Duration. Training duration 45–60 minutes with This age is limited . in children attention far time during save stay difficult to be possible. Therefore for short , but effective exercises system is applied .

Recovery. Every from exercise then rest for 10-15 minutes or light restorative exercises (stretching, breathing) to get) is entered.

2. Special preparation Stage. Goal At this stage athletes special movement technique is developed. The movements complexity increases, exercises combinations and tall technician requirements is added.

Training intensity. High loading is given because this at the age of girls physical development at an optimal level will be. The training is high level endurance and requires flexibility.

Duration. Training The duration is 60-90 minutes, which and girls technician development and to competitions readiness for enough.

Recovery. Recovery for 15-20 minutes is separated, in which active relaxation (massage, light exercises) are important place holds.

3. Competition took stage. Goal. This in stages exercises competition to the conditions is approximated. To the results focused individual and group programs complete to perform on is processed.

Training intensity. High requires intensity, because girls competition to the mode adaptations Need. Endurance and stable technique to develop accent is given.

Continuous gi. Training duration 90 minutes At this stage girls far continue enough exercises to do gets used to.

Recovery. Recovery time 20-30 minutes is, this time complete rest or complicated from exercises then organism restoration for necessary.

Training downloads scientific justification importance. For young people suitable approach. Each stage goals and downloads young and physical preparation to the level suitable accordingly designated training efficiency increases.

Graduality principle of loading step by step increase young athletes excess fatigue and injury the risk reduces.

Recovery time. Every stage for recovery and rest of time separation athletes general to develop positive impact does.

To the competition Preparation: Competition took in the phase high intensive exercises girls to the results directed without preparation to see provides.

The above table and analysis gymnast individual development of girls for the most optimal and safe training mode organization to reach help gives.

The following table weekly training downloads young and preparation to the stage according to defines.

Table 2

Young baddie gymnasts weekly training plan

Week day	Preparation stage	Special preparation stage	Competition took stage
Monday	Physical preparation (40 min)	Technical elements (60 min)	Complete speeches (90 min)
Tuesday	Technical elements (45 min)	Endurance training (70 min)	Special elements (80 min)
Wednesday	Rest to take	Rest to take	Rest to take
Thursday	Physical exercises (50 min)	Combinations (80 min)	Complete programs (90 min)
Friday	Technical elements (45 min)	Competition status create (60 min)	Complete programs (90 min)
Saturday	Action coordination (40 min)	Combinations (60 min)	Actions control to do (70 min)
Sunday	Rest to take	Rest to take	Rest to take

This plan young gymnasts preparation step by step methodology own inside They are trained, special preparation and competition took to the stages separated is, every one stage purpose athletes physical and technician skills to develop focused.

Preparation in the phase training short term and main skills to form focused on. Special preparation in the phase intensity increased, complicated elements study and endurance to develop attention Competition took in the phase and complete programs execution to make mistakes correction and competition to the conditions adaptation priority is considered.

Vacation days of the week two day off days separated is, this recovery and of tension prevent to take for important. Every in stages this days is stored .

Training content. Physical preparation, technical skills, combinations and competition circumstances create sequence through athletes every one-sided develops.

Flexibility. Each in phase training content young groups needs and to the possibilities suitable accordingly working released.

Training intensity growth. Duration of training and complexity step by step exceed goes, this athletes to develop service does.

To recovery Attention. Every rest in stages days athletes physical and spiritual to recovery opportunity gives.

To the competition preparation. Last in stages training complete programs execution to grow and competition conditions to repeat aimed at is, this athletes spiritual and physical readiness strengthens.

Training during gymnast girls physiological indicators following will go.

Table 3

Physiological monitoring of training loads

Indicator	Normative	Permissible value during training	Recovery at the time value
Heart hit speed (Y uQS)	60-80 dice / min.	120-160 dice / min.	70-90 dice / min.
Breath to take frequency	16-20 breaths / min	25-35 breaths / min	18-22 dice / min.
Blood pressure (SB/DB)	110/70	140/90	120/80

The table presents the main physiological indicators necessary to monitor the health of athletes during and after training loads: heart rate (HR), respiratory rate, and blood pressure.

Heartbeat speed (YUT): norm: 60-80 beats / min. Training Time: 120-160 beats / min. Athletes high physical activity with when engaged permission done at the border heart speed increases.

Recovery: 70-90 beats / min. From training after YQS to the standard approach of recovery efficiency shows.

Breath to take Frequency: Normal: 16-20 breaths / min. Exercise Time: 25-35 breaths / min. Activity during energy supply for breath to take accelerates.

Recovery: 18-22 breaths / min. During recovery this indicator to the standard approaches.

Blood Blood pressure (SB/DB): Norm: 110/70 mm. Exercise Blood pressure: 140/90 mm. Physical loading on time blood pressure increase permission done at the borders to be Needed. Recovery: 120/80 mm. In recovery blood pressure stabilizes.

Conclusion as so to speak, physiological indicators training to the loads answer as changes, but they designated permission done from the borders not to exceed need. Recovery in the process indicators to the norm approach athletes of health good that This monitoring method individual load adjustment and athletes excess from stress protection to do for necessary.

Table 4

Training downloads optimization stages

Stage name	Actions
1. Diagnostics stage	Participants physical status assessment (anthropometric and physiological measurements).
2. Exercise plan to compose	Each to the athlete's individual performance according to plans working exit
3. Exercise control	Training in the process intensity and continuity physiological regulations based on management.
4. Results analysis to do	Training-loading and recovery indicators analysis to do through the plan again optimization.

This table training downloads effective management and athletes health storage for step by step approach shows.

Diagnostics stage. Athletes elementary physical status determination for anthropometric and physiological measurements done is increased.

Training plan to **compose.** Each to the individual characteristics of the athlete based without flexible training plan working is released.

The training control to do. Exercise during don't download intensity and duration physiological regulations based on managed.

Results analysis to do. Obtained information based on training efficiency analysis will be done and necessity if so, plans again is compiled.

Conclusion as in other words, this is approach athletes opportunities maximum at the level develop and excess loading prevent to take for necessary be, exercise process individualization and to optimize service does.

Table 5

Recovery processes (rest and food mode)

Recovery types	Term	Content
Passive rest to take	8-10 hours	At night good sleep
Asset rest to take	10-15 minutes	Massage, stretching exercises
Eating	4-5 times	Protein , carbohydrate and foods rich in minerals consumption

Athletes recovery processes passive recreation, active recreation and food such as important aspects own inside takes:

Passive rest. Duration 8-10 hours. Content - night good and good quality sleep through physical and spiritual recovery is provided.

Active rest. Duration 10-15 minutes. Content - massage and stretching exercises through muscles tension reduce and body lighter to the situation to bring

Meals. Duration 4 -5 hours. Composition protein, carbohydrate and foods rich in minerals consumption to do athletes energy reserve to restore service does.

Conclusion. Recovery process right organization to be athletes efficiency increases and excess of tension prevent gets. Passive and active vacation and balanced food together for optimal recovery provides .

Table 6

Evaluation of training results

Evaluation criterion	Stage took status	Stage end status	In percent growth
Sports results	Participation in competitions (only execution of basic elements)	Adding technical elements (combinations) to competitions	20–30% increase
Action technique level	Quality of actions: 50% (many technical errors)	Actions quality : 70–80% (stable) technique)	30–40% improvement
Physiological indicators	Heartbeat speed (YUT): 130–150 dice /min exercise during	Heartbeat speed (YUT): 120–140 beats /min exercise during	10–15% improvement (depending on load) adaptation)
	Breath to take Frequency : 30–35 breaths /min	Breath to take Frequency : 25–30 breaths /min	15% improvement
	Maximum Flexibility : 20 cm	Maximum Flexibility : 25–30 cm	20–30% improvement

Sports results. Training at the beginning girls basic technique (jumping, balancing) storage, simplified combinations) in competitions used. Step at the end and they more complicated combinations stable to do to pass is expected. Growth percentage competition results and coach by given to the grades mainly is considered.

Movement technique level. Stage at the beginning girls doer in action many technician mistakes observed (balance) save not getting, wrong coordination). Finally and technician stability and accuracy increases. Errors number decrease and complexity level increase growth indicators determines.

Physiological parameters. Training at the beginning girls heart hit speed and breath to take frequency high is, this to load complete incompatibility shows. Step at the end this indicators decreases, this and to training organism adapted tree gives.

Flexibility. Flexibility young gymnasts for important from indicators one is, this 20–30% increase (from the ground up) hand to the end distance (decrease) is expected.

Conclusion. The process of developing flexibility should be carried out gradually. The dose of exercises aimed at developing flexibility is small, but the exercises should be applied systematically in each lesson. Before starting exercises to increase the mobility of the joints, you need to warm up your muscles. Stretching exercises are effective if you repeat them until you feel slight pain.

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IMPROVING INVESTMENT ATTRACTION IN THE DEVELOPMENT OF THE REGIONAL ECONOMY

Abstract: *this article explores strategies for enhancing regional economies' ability to attract investment. In the era of globalization and increased competition for investments, regions must go beyond the ordinary in creating good conditions for investors. The study identifies the key determinants that influence investment decisions, including infrastructure, labor quality, regulatory environment, and incentives. Through exploring good case studies and best practices, the article offers pragmatic tips for policymakers and regional developers wanting to enhance local economic growth and sustainability.*

Keywords: *investment attraction, regional economy, economic growth, infrastructure, workforce development, policymaking, sustainability.*

Introduction

Regional economies in today's high-speed global economy are tasked with attracting and retaining investment to stimulate economic growth and development. Not only is investment crucial to economic growth, but employment generation and social advancement as well. As the majority of the areas are competing for limited investment money, identifying factors that drive the investor decision is important. The paper investigates drivers of investment attraction and recommends intervention that regional authorities can use to improve their competitiveness.

Main part

Investment promotion is a keystone to regional economic development, a driver that fuels business growth, creates jobs, and stimulates progress. As regions compete for limited investment capital, it is increasingly important to dig into the root causes of investor choice. This article discusses cross-cutting initiatives that regional planners can undertake toward enhancing investment attraction and, in turn, sustainable growth.

First, the investment viability of a region often depends on its infrastructure. Fine transportation, utility, and telecommunication facilities are important to maintaining business and enterprise. Regions with sophisticated infrastructure not only provide the necessary free flow of goods and services but improve connectivity and accessibility for investors and enterprises as well. Investment policymakers ought to give preference to financing infrastructure development projects serving

current deficits and future growth so that the region can support the needs of various industries.[46]

Besides infrastructure, the quality of the local workforce is also a decisive factor in investment decisions. Companies seek areas with skilled and adaptable labor forces capable of supporting the needs of multiple sectors. To improve the workforce quality, regional governments can finance vocational training and education that meet local industry requirements. Synergy between firms and schools can bring about tailor-made training programs, internships, and apprenticeships, so the workforce is developed with the desired skills and information to thrive within a competitive scenario.

Regulatory regimes can also be significant in pulling investments in. Investors prefer locations with transparent and predictable regulatory regimes that facilitate the conduct of business without unnecessary red tape. The policymakers can make their region more attractive by streamlining bureaucracies, removing excess regulations, and promoting a business-friendly climate. This is not only likely to attract foreign investments but also to trigger the growth of existing firms, which in turn would contribute to the regional economy. Incentives are also an important consideration in attracting investments. Financial incentives such as tax holidays, grants, and subsidies can induce companies to relocate or invest in a location. Policymakers must, however, design incentive programs that are fiscally sustainable and economically viable in the long run. Incentives need to be weighed against the availability of public funds to ensure that investment attraction gains are reaped without compromising the fiscal standing of the area.

Collaboration and networking among multiple stakeholders are key in developing a competitive regional investment environment. Local governments, communities, and businesses need to collaborate to develop a common strategy that raises the profile of the region as well as its appeal to potential investors. Through organization of business forums, trade exhibitions, and investment conferences, regions have an opportunity to promote their distinctive features, engage with industry leaders, and establish networks that can translate into future investment possibilities. Moreover, branding and marketing are also important factors in attracting investments. Areas must effectively convey their strengths, resources, and opportunities to prospective businesses. A brand identity can also play a pivotal role in how investors view them and make decisions. Utilizing digital media, social media, and targeted marketing campaigns enables areas to reach wider audiences and maximize their unique selling points. An effective marketing plan must incorporate multi-channel communication vehicles to target various groups of investors.[47]

[46] Shekhovtsov, R. V., M. A. Ponomareva, S. G. Yaroshenko, and L. R. Khaibullin. "Instruments of investment attraction in order to fulfill the structural priorities of sustainable regional development (Study based on the Rostov region)." (2017).

[47] Ravshanova, Muxtarama. "ENHANCING INVESTMENT ATTRACTION IN REGIONAL ECONOMIC DEVELOPMENT." American Journal of Modern World Sciences 1, no. 4 (2024): 215-220.

In the current competitive environment, innovation is a key strategy for enhancing investment attraction. Places that invest in research and development, nurture startups, and foster entrepreneurial environments have the potential to establish themselves as innovation hubs. The setting up of innovation hubs, incubators, and accelerators has the potential to create ecosystems in which new ideas can grow and eventually attract investment from businesses interested in leveraging new technologies and innovative solutions.

Besides, knowledge of global economic trends and investors' preferences is the most important factor in regional development. Policymakers must be informed about trends in the world's markets, emerging industries, and investment patterns. Through monitoring statistics and conducting market research, regions can adapt their policies based on the current preferences of investors, such as social influence and sustainability. Regions that emphasize sustainable strategies and corporate social responsibility can enhance their attractiveness to socially responsible investors who are interested in performing environmentally and ethically friendly business operations. Lastly, monitoring the effectiveness of investment promotion strategies is essential to sustain improvement. Regional authorities need to establish metrics and benchmarks to measure the effectiveness of initiatives. Tracing investment flows, employment creation, and enterprise development can provide valuable lessons on what works and how things need to be changed. Obtaining feedback from investors and stakeholders will also facilitate streamlining strategies and ensuring that the region remains competitive.[48]

Lastly, improving investment attractiveness in regional economic growth requires an integrated, multi-dimensional approach. Emphasis on infrastructure, human capital formation, regulatory environment, incentives, collaboration, marketing, innovation, and sustainability can enable regions to construct a favorable investment climate. As regional economies are becoming more developed and competing for investment, embracing these strategies will yield long-term development, prosperity, and a better level of living for all. Successful investment recruitment is more a question of creating an environment in which businesses can thrive than of enticing capital, with the end result of fostering a sound and resilient regional economy.

Conclusion

Regional economies should attract additional investments to drive sustainable development and economic resilience. By focusing on the creation of robust infrastructure, cultivating a highly educated labor pool, streamlining regulatory processes, and offering competitive incentives, areas can be investment locations of preference. Ultimately, this holistic strategy benefits investors as well as resident quality of life as part of a healthy economic system. Through cooperation and planning, areas can maximize their potential and support long-term economic health.

[48] Halik, Abdul. "Strengthening Regional Economic Policy for Investment Attraction: Case in Banten Province." Jurnal Bina Praja 8, no. 1 (2016): 1-11.

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BOSHLANG‘ICH SINF O‘QUVCHILARINI HARAKATLARGA O‘RGATISHDA JISMONIY TARBIYA DARSLARINING O‘RNI

Annotatsiya. *Ushbu maqolada boshlang‘ich sinf o‘quvchilarini harakatlarga o‘rgatishda jismoniy tarbiya darslarining ahamiyati va roli yoritib berilgan. Jismoniy faollik orqali bolalarning motorikasi, muvozanati, irodasi va jamoada harakat qilish ko‘nikmalari rivojlanishi tadqiq etilgan. Tadqiqot natijalari jismoniy tarbiya mashqlarining bolalar o‘sishi va rivojida muhim omil ekanini ko‘rsatdi.*

Kalit so‘zlar: *jismoniy tarbiya, boshlang‘ich sinf, harakat ko‘nikmalari, bola rivoji.*

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THE ROLE OF PHYSICAL EDUCATION LESSONS IN TEACHING MOVEMENT SKILLS TO PRIMARY SCHOOL STUDENTS

Annotation. *This article explores the importance and role of physical education lessons in teaching motor skills to primary school students. It investigates how physical activity contributes to the development of motor coordination, balance, willpower, and teamwork in children. The research results indicate that physical exercises are essential for children's growth and development.*

Keywords: *physical education, primary grades, motor skills, child development.*

Kirish

Mamlakatimizda yosh avlod tarbiyasiga aloxida e’tibor qaratilmoqda, ayniqsa bolalarning jismoniy rivojiga e’tibor qaratish milliy ahamiyat kasb etmoqda. Chunki, bolaning harakat faolligi uning umumiy rivojlanishida asosiy omillardan biri hisoblanadi. Ayniqsa, boshlang‘ich sinf o‘quvchilarida jismoniy harakatlar orqali motorika, muvofiqlashuv, iroda, diqqat va jamoaviy harakat qilish

ko‘nikmalari shakllanadi. Bu esa kelgusida bolaning ta’limga bo‘lgan munosabati va shaxsiy rivojiga ijobiy ta’sir ko‘rsatadi.

Respublikamizda bolalarning sog‘lom o‘sishini ta’minlash, ularni jismoniy faollikka yo‘naltirish maqsadida qator me’yoriy-huquqiy hujjatlar qabul qilingan. Xususan, O‘zbekiston Respublikasi Prezidentining 2022-yil 4-avgustdagi PQ-357-sonli "Yoshlarni jismonan chiniqtirish va ommaviy sportga jalb etish tizimini yanada rivojlantirish chora-tadbirlari to‘g‘risida"gi qarori jismoniy tarbiya sohasini yanada takomillashtirishda muhim asos bo‘lib xizmat qilmoqda. Ushbu qarorda maktab yoshidagi bolalarni ommaviy sport turlariga jalb qilish, ularda sog‘lom turmush tarzini shakllantirish, jumladan jismoniy tarbiya darslarini samarali tashkil etish masalalariga alohida e’tibor qaratilgan [1].

Boshlang‘ich sinflardagi jismoniy tarbiya darslari orqali bolalarga to‘g‘ri harakat qilish, o‘zini nazorat qilish, jamoa bilan hamkorlikda faoliyat yuritish ko‘nikmalari singdiriladi. Shu bois, ushbu maqolada jismoniy tarbiya fanining boshlang‘ich sinf o‘quvchilari rivojidagi o‘rni va ahamiyati to‘g‘risida fikr yuritiladi.

Adabiyotlar taxlili va metodlar

Mazkur tadqiqotda boshlang‘ich sinf o‘quvchilarining harakat ko‘nikmalarini rivojlantirishda jismoniy tarbiya darslarining ta’sirini o‘rganish maqsad qilindi. Buning uchun tadqiqot ob’yekti sifatida Namangan shahar va Uychi tumanidagi 2 ta umumta’lim maktabi tanlab olindi. Ulardagi 4-sinf o‘quvchilari tahlil uchun jalb etildi.Tadqiqotda 120 nafar boshlang‘ich sinf o‘quvchilari ishtirok etishdi.

Tadqiqotda qo‘llanilgan asosiy uslublar quyidagilardan iborat: kuzatuv, pedagogik tajriba, so‘rovnoma va test sinovlari. Kuzatuv usuli orqali darslardagi bolalarning ishtiroki, jismoniy mashqlarga bo‘lgan munosabati va faollik darajasi o‘rganildi hamda baholandi. Pedagogik tajriba jarayonida o‘quvchilar ikki guruhga ajratildi: nazorat guruhi va tajriba guruhi. Tajriba guruhida jismoniy tarbiya mashqlari zamonaviy usullarda, faol va ijodiy yondashuv orqali tashkil etildi. Nazorat guruhi esa an’anaviy tartibdagi mashg‘ulotlarda ishtirok etdi [11].

So‘rovnoma orqali o‘qituvchilar va ota-onalarning fikrlari o‘rganildi. Ular bolalarning jismoniy faolligi, kundalik faol harakatlari va sog‘lom turmush tarziga bo‘lgan munosabati haqidagi ma’lumotlarni taqdim etdilar. Test sinovlari orqali esa o‘quvchilarning muvozanat, tezlik, harakatni muvofiqlashtirish kabi ko‘nikmalari baholandi [12].

Tadqiqot jarayonida olingan natijalar uning keyingi bosqichlarida tahlil va qiyoslash uchun asos sifatida xizmat qildi.

Natijalar va muhokama

Tadqiqot jarayonida tajriba va nazorat guruhlaridagi o‘quvchilarning jismoniy ko‘rsatkichlari tahlil qilindi. 6 oy davomida jismoniy tarbiya mashg‘ulotlari tajriba guruhida interaktiv va harakatlarga yo‘naltirilgan usullarda tashkil etildi. Bu davr mobaynida o‘quvchilarning harakat faolligi, muvofiqlashuv qobiliyati va motorikasining holatida sezilarli o‘zgarishlar kuzatildi.

Test sinovlari orqali bolalarda yugurish tezligi, sakrash masofasi, muvozanatni saqlash qobiliyati va guruhda ishlash qobiliyati baholandi.

1-jadval. Tadqiqotdan oldingi va tadqiqotdan keyingi tajriba hamda nazorat guruhlari natijalar jadvali

№	Ko‘rsatkich	Tajriba guruhi (T.a.)	Tajriba guruhi (T.k.)	Nazorat guruhi (T.a.)	Nazorat guruhi (T.k.)
1	30 metrga yugurish (sek.)	6.8	6.2	6.9	6.8
2	Uzunlikka sakrash (sm)	113	125	112	113
3	Bir oyoqda muvozanat (sek.)	9	14	8	9
4	Jamoada ishlash bahosi (1-5)	3.8	4.7	3.7	3.8

Jadvaldan ko‘rinib turibdiki, tajriba guruhidagi o‘quvchilar har bir ko‘rsatkich bo‘yicha yuqori natijalarga erishgan. Xususan, muvozanatni saqlash va jamoaviy faoliyat ko‘nikmalarida katta farq qayd etilgan. Bu jismoniy tarbiya mashg‘ulotlarining samarali tashkil etilishi natijasidir.

Olingan natijalar taxlili shuni ko‘rsatadiki, jismoniy tarbiya darslarida faol va tarkibiy yondashuvlar qo‘llanilsa, bolalarda nafaqat jismoniy, balki psixologik va ijtimoiy rivojlanish ham kuchayadi.

Tadqiqot natijalari, jismoniy tarbiya darslari boshlang‘ich sinf o‘quvchilari rivojida muhim o‘rin tutadigan omil ekanini yana bir bor tasdiqladi. Ayniqsa, interaktiv va harakatga yo‘naltirilgan usullar bilan tashkil etilgan mashg‘ulotlar o‘quvchilarda jismoniy faollikni oshirish, harakatlarini muvofiqlashtirish hamda jamoaviy ishlash qobiliyatini shakllantirishga katta hissa qo‘shdi. Bu holat tajriba guruhi natijalarida yaqqol ko‘zga tashlandi.

O‘quvchilardagi muvozanat, tezlik, chaqqonlik kabi ko‘nikmalar nafaqat jismoniy rivojlanish uchun, balki ularning umumiy bilim olish jarayonida ham muhim ahamiyat kasb etadi. Chunki bunday ko‘nikmalar bolalarning diqqati, intizomi va ijtimoiy muomalasiga ham ijobiy ta’sir ko‘rsatadi. Shu bois, jismoniy tarbiya darslariga shunchaki harakat mashg‘uloti sifatida emas, balki bola shaxsiyatini shakllantiruvchi kompleks vosita sifatida yondashish lozim.

Boshlang‘ich ta’lim bosqichidagi bolalar harakat va ko‘nikmalarni tezroq hamda samarali o‘rganadilar. Bu fikr pedagogik va psixologik tadqiqotlar bilan ham tasdiqlangan. Jismoniy mashqlar orqali bolalarda nafaqat tana baquvvatligi, balki iroda, o‘zini boshqarish, maqsadga intiluvchanlik hamda guruhda ishlash kabi hayotiy ko‘nikmalar shakllanadi.

Shu sababli, jismoniy tarbiya darslarini metodik jihatdan to‘g‘ri tashkil etish va ularni o‘quv dasturlarining ajralmas qismi sifatida rivojlantirish xozirgi kunning eng dolzarb vazifasi xisoblanadi.

Xulosa

Olib borilgan tadqiqot natijalari shuni ko‘rsatdiki, boshlang‘ich sinf o‘quvchilarini harakatlarga o‘rgatishda jismoniy tarbiya darslari beqiyos

ahamiyatga ega. Bolalarda jismoniy mashqlar orqali nafaqat tana baquvvatligi, balki muvozanat, harakatni muvofiqlashtirish, diqqatni jamlash, jamoa bilan ishlash, iroda va intizom kabi muhim shaxsiy sifatlar shakllanadi. Bu esa ularning ta'lim jarayonida faol va muvaffaqiyatli ishtirok etishlariga xizmat qiladi.

Tajriba va nazorat guruhlari o'rtasidagi natijalarni taqqoslash shuni aniq ko'rsatdiki, interaktiv, zamonaviy metodlar asosida tashkil etilgan jismoniy tarbiya darslari bolalarda yuqori motivatsiya va yaxshi natijalarni ta'minlaydi. Bu esa o'z navbatida bolalarni darslarda faol qatnashishiga, harakatlarga bo'lgan qiziqishini ortishiga hamda o'zini namoyon qilishlariga katta imkoniyatlar yaratadi.

Yuqoridagi fikrlarga asoslangan holda, quyidagi tavsiyalar bola shaxsini rivojlanishiga ta'sir ko'rsatuvchi omillardan deb xisoblaymiz:

1. Jismoniy tarbiya darslarini bolalar yoshi, jinsi va individual xususiyatlariga mos ravishda tashkil etish.
2. Dars jarayonida interaktiv va o'yinli mashqlardan keng foydalanish.
3. Jismoniy tarbiya fani o'qituvchilarini zamonaviy pedagogik texnologiyalar asosida qayta tayyorlash va malakasini oshirish.
4. Umumta'lim maktablarini kerakli sport jixozlari va maydonchalar bilan ta'minlashni yaxshilash.
5. Ota-onalarni ham bolalarning jismoniy faolligiga jalb etish.

Jismoniy tarbiya bola kelajagini shakllantiruvchi muhim omillardan biridir. Uning ilmiy jixatdan to'g'ri tashkil qilinishi har bir bolaning sog'lom, aqlli va hayotda faol, barkamol shaxs bo'lib voyaga yetishiga zamin yaratadi.

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EFFICIENCY OF OIL COOLING METHODS FOR PISTONS IN INTERNAL COMBUSTION ENGINES

Annotation. *The article discusses the variety of piston oil cooling methods used in vehicles, including the formation of ribs on the lower part of the piston crown, splash lubrication techniques for cooling, and secondary cooling achieved by repeated oil impact on the hot surface of the piston.*

Keywords: *transport, piston, ring, groove, engine, heat, material, deformation, temperature, rotational speed, cooling, crankshaft.*

Introduction. One of the methods used to increase engine power is by raising the crankshaft's rotational speed. However, this inevitably increases the thermal and mechanical loads on the piston group. Therefore, oil cooling—considered a relatively effective method—is used, particularly to reduce the piston's temperature.

According to Professor B.Ya.Ginsburg's analysis, for engines with a cylinder diameter where the power exceeds 3.67 kW per centimeter, it is recommended to cool the piston with oil to ensure the reliable and long-term operation of the piston rings. This method not only lowers the temperature of the piston crown and the zone where the first ring is located but also reduces the temperature of the entire piston. Aside from requiring slight structural modifications to some parts of the piston or engine, this is one of the methods that ensures reliable piston operation.

Main Processes. There are various methods of oil cooling, with the main ones including:

- oil spray cooling;
- oil splash cooling;
- combined oil spray and splash cooling;
- oil flow cooling.

For tractor engines, the most appropriate method—requiring no significant structural modifications—is piston cooling by oil spray. In this method, oil is primarily sprayed toward the inner part of the piston, specifically the underside of the piston crown.

Oil can be sprayed onto the piston crown using two different methods:

from the upper end of the connecting rod (Figure 1);

from a fixed nozzle mounted inside the crankcase (Figure 2).

In both cases, compared to other oil cooling methods, only minimal structural changes are required.

According to researcher E.A. Pakhomov, when the piston of the D-37E engine is cooled by oil spray, the temperature drops by 36 to 53°C at the crown and by 20 to 28°C at the skirt.

It should be noted that, in order to improve the effectiveness of oil cooling, it is advisable to create ribs on the underside of the piston crown. This, firstly, increases the heat transfer surface, and secondly, enhances the strength of the piston crown. In this case, the value of $q_n = 6,6$ can be increased up to. apid cooling occurs on the surface where the sprayed oil meets the piston ($\alpha_м \geq 2000$ *kkal/m².hours °C*), while cooling on the other surface is slower ($\alpha_м \geq 400...600$*kkal/m².hour °C*).

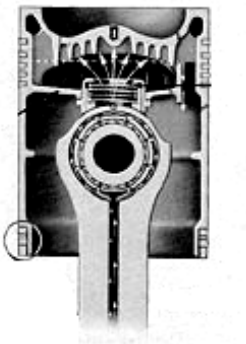

***Figure** 1. Piston cooling with oil sprayed from the connecting rod head*

***Figure 2.** Piston cooling by oil sprayed from stationary nozzles.*

When the engine's crankshaft rotational speed increases, the continuity of the oil flow from the upper end of the connecting rod, as described in the method, is disrupted, causing the oil to be supplied in pulses. The reason for this is the inertial forces acting on the oil flowing through the channel inside the connecting rod. If the pressure from the oil flowing upward is less than the pressure from the inertial forces acting in the opposite direction, the oil will not exit the connecting rod head. In the opposite case, the oil will be ejected. This phenomenon was thoroughly studied by Professor B.Ya. Ginsburg, who provided recommendations for practical application. To prevent this occurrence, an automatically operating valve is installed at the lower end of the connecting rod.

In general, this method is considered effective and is applied in agricultural tractors.

The second variant of this method involves spraying oil from a fixed nozzle installed on the side of the crankcase. The advantage of this method is that oil is continuously sprayed in a specified amount. However, the disadvantage is that before the oil reaches the top, 20 to 40% of the sprayed oil does not come into contact with the designated piston surface and is wasted. In this method, an increase in oil consumption for burning is observed. This happens because the amount of oil sprayed onto the cylinder walls increases, and the oil scraper ring is unable to remove it all, causing some of the oil to enter the combustion chamber and burn.

Oil Splash Cooling. In this method, a special chamber is provided inside the piston for the oil. The oil accumulated in this chamber, due to the piston's

reciprocating motion, repeatedly strikes the cooling surface, absorbing more heat and continuously releasing it into the oil flow. Therefore, it is crucial to correctly determine the duration of the oil's stay in the chamber. If the oil remains too long, it will not absorb heat from the hot surface, and instead of cooling, it will become hot itself and cause overheating.

Oil Splash Cooling can be organized in two ways:

- Splashing in an open chamber (Figure 3).
- Splashing in a closed chamber (Figure 4).

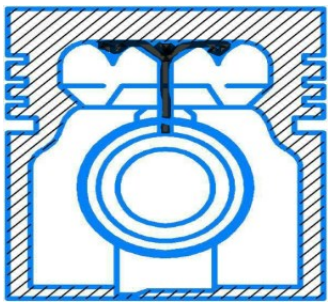

Figure 3. Cooling the piston by splashing oil in an open volume.

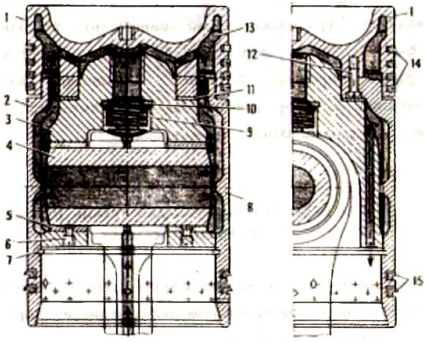

Figure 4. Cooling the piston by splashing oil in a closed volume..

The effectiveness of splash cooling depends on the crankshaft's rotational speed, the viscosity of the oil, and the degree to which the chamber is filled with oil. The results of the research show that when the chamber is filled with oil up to 50%, the heat transfer coefficient is the highest. However, when the chamber is filled to 5% or 90%, the heat transfer coefficient decreases by 1.55 times and 2 to 3 times, respectively.

In this method, the thermal stress indicator, denoted by $q_n=10$ does not exceed the specified limit. When cooled using this method, the temperature in the area where the first piston ring is located decreases by 25 to 30°C.

Oil flow cooling methods are not used for agricultural engine pistons. They are primarily used in high-power, low-speed engine pistons. For this purpose, special spiral channels are created within the piston body to allow the flow of oil (Figure 5).

Figure 5. Cooling the piston with oil in the channels made in the body.

Since this method is not used in agricultural tractor engines, I have decided

to limit the discussion to the brief explanation above.

In general, cooling with oil is considered the most effective method for reducing thermal stress on the piston. Choosing one or another of these methods, based on factors such as engine power, function, crankshaft rotation frequency, and piston construction, yields the best results.

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A STUDY OF THE NAKSHBANDI-MUJADDIDI TARIQAT IN SUFI

Abstract: *This article discusses the essence of Sufism and its importance and penetration into Muslim and Indian lands. It also provides a brief history of this order, its regional spread, and information about the science of theology.*

Keywords : *Sufism, India, order, Chishtiya order, Naqshbandi-Mujaddidiya order.*

Today, in a situation where rapid reforms are being carried out in our country, it follows that studying Islamic theology and deeply studying the factors that influenced the emergence of theology in the medieval Islamic world are one of the important social requirements. After all, we must not forget that we are the children of a country that is a leader in Sufism, as in many other fields of science and enlightenment.

By the beginning of the 9th century, the theoretical foundations of Sufism were developed, the practical spiritual and psychological exercises of Sufis, methods of self-education and self-cultivation were formed, the concepts of tariqat, enlightenment, and truth emerged, and a set of views on these three parts of Sufism was formed - Sufism was established as a separate science.

Islamic scholar Raghib Sarjani emphasizes that the word " knowledge" is absolutely present in the Book of Allah and the Sunnah of the Prophet, without any restrictions or stipulations. Therefore, knowledge **is** the prosperity of the country, the goodness of the world, and the happiness of both worlds for humanity.

this approach, it is important to study the factors, sciences, and movements that developed Islamic theology and formed complete theological approaches within it.

Although the formation of Sufi schools was initially associated with the widespread Islamic regions such as Kufa, Baghdad, Basra, and Egypt, later, by the 11th and 12th centuries, independent orders such as Yassawiyya, Kubrawiyya, and Khojagon, which were widely recognized throughout the Islamic world, also emerged in Central Asia . The responsibility of the sheikhs of the order for the spiritual and political development of society later became a tradition for other orders as well. The activities of the sheikhs of the Sufi orders in Central Asia had a great impact on the social, political, and religious situation of the region.

Khojagon The order dates back to the 14th century . Come , Bahauddin. Naqshbandi by further improved . This is Medium In Asia Mongols from the reign next religious-spiritual of life new in the direction to the formation basis It was from the 14th-15th centuries . starting this sect representatives society socio-political in life active they started participating .

Over a certain period, representatives of one or another sect not only gained their position in socio-political life, but also created the basis for their penetration into other countries.

“Speaking of this,” says the President of the Republic of Uzbekistan Shavkat Mirziyoyev. “There are many examples, such as the gradual development of the Great Silk Road and trade relations, the works of our great scholars and writers of the past dedicated to India, the Babur dynasty that operated in this country, and the widespread spread of the Naqshbandi order founded by Bahauddin Naqshband in the Indian lands.”

Thus, it can be said that the presence of Sufism was a driving force in the spread of Islam throughout South Asia. The penetration of Islam into India is due to the Sufi mystical traditions of the Delhi Sultanate in the 10th-11th centuries, and then spread throughout all parts of India. It is known that chronologically in terms of separated standing initial Delhi Sultanate Turkish and Afghan countries from the rulers consists of was . His as a result South Asia Islam wide spread and culture study for conditions since creation is a sign .

Oriental scholars acknowledge It is believed that poetry played an important role, no less than religious and scientific sources, in popularizing the principles of Sufi philosophy . In this regard, the works of the brilliant, mystical poet Khusrau were very useful in the field of promoting Sufism, especially in the conditions of multinational India.

"The rulers of the time respected and respected the great gurus who had already spread their fame throughout the Muslim and Indian worlds and had countless admirers, and they listened to their advice and carried out their activities. One of those great people was , cleaning order representative "Amir Khusraw is Dehlavi. "

Hazrat Alisher Navoi emphasizes in his work "Nasayim ul-muhabbat" that " Khusraw Dehlavi and Hasan Dehlavi are his (i.e. Sheikh Nizamuddin Awliya) disciples."

Islam, according to Sufis, has had a lasting influence on syncretic values, literature, and education. Sufi preachers , merchants in appearance to the sea travel and trade through To Gujarat enter This is Sufism . slowly slowness with this in the area Islam religion with related processes to the population propaganda first organizational events organized known does . Divine spirituality , cosmic harmony , love and humanitarianism about Sufism teachings simple to people strong impact Islam mystical concepts in distribution help gave and India Sufism culture modern to the epicenter to convert above factors reason We believe it was .

The sources state that the Naqshbandi order was called by various names - "Siddiqiya", "Tayfuriya", "Khojagoniya", "Naqshbandiya", "Naqshbandiya-Ahrariya", "Naqshbandiya-Mujaddidiya", "Naqshbandiya-Mazhariyya", "Naqshbandiya-Kholidiya", and then the name "Naqshbandiya" itself became fixed. Some of these are associated with the names of sheikhs who left a certain mark on the development of the science of Sufism, such as Abu Bakr, Abu Yazid Bistami, Ubaydullah Ahrar, Shamsiddin Mazhar, Khalid Ziyovuddin Baghdadi, while others,

for example, Khojagoniya - Yusuf Hamadoni and one of his students Abdukhaliq Ghijduvani, Mujaddidiya - Imam Rabbani Ahmad Farouk Sirhindi.

Here, we first describe our research on the "Naqshbandi-Mujaddidiya" order, which is the basis of the social formation of society and corresponds to the traditions of spiritual continuity.

Mujaddid (ar. – reformer , renewer , reviver) – the reformer of Sharia renewable said meanings means . One word with in other words , innovator mujtahid , fiqh , i.e. modern to issues legal solutions to give to the ability has was At the end of the 16th century and the beginning of the 17th century , a new period of growth in the development of the Naqshbandi order began. During this period embroidery of the order one network as , Naqshbandi-Mujaddidiya branch to the surface came . In this , Naqshbandi of the order from theorists one , the same at the time in our country activity take going of sects in series name mention There are also cases where the term "mujaddidiya" , which is used to refer to a specific sect or direction, has been taken literally by some Western researchers.

In particular , the Swiss researcher Anke von Kügelgen in her research states: “According to Islamic tradition, a new mujaddid comes at the beginning of every century. Many of the leaders or patrons of the order were recognized as the innovators of the 13th century according to the Muslim calendar. In Damascus, Sheikh Khalid (1776-1827) received this title. In Bukhara, we can see the ruler Shah Murad (reigned 1785-1800) from the Mangid dynasty as the “innovator of the 13th century.” Because the Naqshbandi order began to be called Naqshbandi-mujaddidiya, that is, “renovated,” after Sheikh Ahmad Sirhindi (1564-1624).

This is it. It means that it comes from the hadith of the Prophet Muhammad: "Allah sends one renewer of His religion every hundred years," and secondly, it was a reference to the fact that Imam Rabbani was recognized as one of the most prominent scholars of his time, the "mujaddidi alfi soni," that is, the "renewer of the second millennium of the Hijri."

The Chishti and Naqshbandi-Mujaddid orders attempted to base their doctrinal foundations on the philosophy of the word.

In the Encyclopedia of Islam, theology is defined as a movement that seeks to substantiate Islamic religious doctrine. Also, by the time the science of theology emerged, it was no longer possible to be satisfied with only providing evidence from the Quran and Sunnah in matters of faith, as in previous times.

In conclusion, it should be noted that the Naqshbandi-Mujaddidiya order, which emerged as a branch of the Naqshbandi order, continued the laws and regulations of the Naqshbandi order, as a result of which it became closer to the lifestyle of society. This ensured the wider penetration of Naqshbandi-Mujaddidiya into the broad strata of the population and gained significant importance in the socio-political, spiritual and cultural life of the peoples of Central Asia, the Middle and the Middle East. One of the unique features of the Naqshbandi-Mujaddidiya order is that it is not limited to one region, but has spread widely throughout the Muslim world.

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Ingliz filologiyasi. Ingliz funksional leksikasi kafedrasi
O'zDJTU.

TANQIDIY FIKRLASHNI TIL O'RGANISH FAOLIYATLARI ORQALI RIVOJLANTIRISH

Annotatsiya*:Ushbu maqola tanqidiy fikrlash ko'nikmalarini til o'rganish faoliyatlari orqali rivojlantirish imkoniyatlarini o'rganadi. Unda nazariy asoslar, amaliy sinf strategiyalari va empirik tadqiqotlar ko'rib chiqiladi hamda til o'rganuvchilarda tahliliy va baholovchi qobiliyatlarni shakllantirishga xizmat qiluvchi eng yaxshi tajribalar yoritiladi. Tadqiqot natijalari shuni ko'rsatadiki, yaxshi ishlab chiqilgan topshiriqlar nafaqat til kompetensiyasini rivojlantiradi, balki intellektual mustaqillik va muammolarni hal qilish ko'nikmalarini ham rivojlantiradi.*

Kalit so'zlar: *lingvistik kompetensiya, intellektual mustaqillik, tanqidiy fikrlash, sotsio-madaniy nazariya, sinf strategiyalari.*

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DEVELOPING CRITICAL THINKING THROUGH LANGUAGE LEARNING ACTIVITIES

Annotation:*This article explores how critical thinking skills can be developed through language learning activities. It examines theoretical foundations, practical classroom strategies, and empirical research, highlighting best practices for fostering analytical and evaluative abilities in language learners. The findings suggest that well-designed tasks not only enhance linguistic competence but also cultivate intellectual autonomy and problem-solving skills.*

Key words: *linguistic competence, intellectual autonomy, critical thinking, socio-cultural theory, classroom startegies*

In an increasingly interconnected world, language proficiency alone is insufficient; learners must also develop critical thinking to navigate complex social, academic, and professional environments. Critical thinking involves analyzing, evaluating, and synthesizing information, and it is integral to effective communication. This article discusses how language learning activities can be structured to simultaneously build linguistic and critical thinking competencies.

Critical thinking is underpinned by theories from cognitive psychology and constructivist learning. Vygotsky's socio-cultural theory emphasizes interaction and scaffolding, while Bloom's taxonomy provides a hierarchical model of

cognitive skills. These frameworks support the integration of critical thinking into language education by promoting tasks that require higher-order thinking, such as evaluation and creation.

Classroom Strategies effectively embed critical thinking in language learning:

Debates and Discussions: These activities require learners to articulate, defend, and challenge viewpoints, fostering analytical reasoning.

Problem-Solving Tasks: Scenario-based exercises encourage learners to apply language skills to real-world problems, promoting creativity and decision-making.

Critical Reading and Writing: Engaging with texts critically—identifying bias, argument structure, and evidence—sharpens both comprehension and analytical skills.

Role-Plays and Simulations: These allow learners to navigate complex situations, requiring empathy, negotiation, and reflective thinking.

Project-Based Learning: Collaborative projects demand planning, research, and synthesis of information, integrating language use with critical inquiry.

Research supports the effectiveness of integrating critical thinking into language learning. A study by Halpern (2014) demonstrated that language learners engaged in debate-based curricula showed significant improvements in both critical thinking and speaking proficiency. Similarly, Moore (2017) found that project-based tasks enhanced learners' ability to critically evaluate sources and articulate arguments coherently.

Implementing critical thinking activities requires careful consideration of learners' linguistic proficiency to ensure tasks are accessible yet challenging. Teachers need professional development to design and facilitate such tasks effectively. Additionally, assessment of critical thinking remains complex and requires rubrics that capture both language and cognitive dimensions.

Conclusion

Integrating critical thinking into language learning enriches both linguistic and intellectual development. By employing interactive, inquiry-based activities, educators can prepare learners not only for language exams but also for active participation in global discourse. Future research should continue to refine methodologies for assessing and enhancing critical thinking in diverse language learning contexts.

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IMPROVING THE ACCOUNTING OF OTHER INCOME IN THE NATIONAL ACCOUNTS SYSTEM

Abstract: *This article examines the challenges of accounting for other income within the national accounts system and offers policy, academic, and practical recommendations to improve financial transparency and measurement accuracy through standardization, technological integration, and regulatory reform.*

Keywords: *national accounts, financial reporting, other income, accounting standards, measurement accuracy*

Introduction

Financial institutions face significant challenges in accurately accounting for other income in the national accounts system, necessitating a multifaceted approach that incorporates policy recommendations, academic insights, and practical solutions. A key issue is the selection and application of accounting policies, which must align with both national and international standards to ensure consistency and reliability in financial reporting. This involves addressing changes in accounting policies, estimates, and errors, as well as considering events after the reporting date and the continuity of operations, as highlighted in the comparative study of accounting policies[1]. Additionally, the accurate reflection of interest and other expenses related to loans and borrowings is crucial, with state and non-state regulators providing guidelines to improve the reliability of financial statements[2]. The integration of large-scale financial transactions data into national accounts, as demonstrated in the UK context, offers a bottom-up approach that enhances the granularity and accuracy of input-output tables, although it requires careful interpretation to align with established economic indicators[3]. Risk management practices are also essential, as financial institutions must navigate complexities such as regulatory compliance and the impact of globalization, which can affect the accuracy of financial reporting[4]. The emergence of Fintech further complicates the landscape, introducing challenges in taxation and regulatory compliance that require innovative solutions and agile frameworks to maintain financial stability[5]. Recommendations for improving accounting practices include enhancing the representation of government grant operations, which involves categorizing transactions and adopting international best practices to improve the quality of financial information[6]. By adopting standardized procedures, embracing technological innovations, and enhancing regulatory frameworks, financial

institutions can better address the challenges of accurately accounting for other income, thereby ensuring transparency and integrity in the national accounts system.

Policy Recommendations

1. Enhancing Transparency and Reporting Standards
   - Policymakers should promote transparency in financial reporting to reduce inaccuracies in national accounts. This can be achieved by adopting country-by-country reporting (CbCR) standards, which require companies to disclose their financial activities in each jurisdiction they operate in. Such measures can help identify profit-shifting activities and ensure accurate tax revenues[7–9].
   - Regulatory bodies should enforce stricter reporting requirements for financial intermediation services indirectly measured (FISIM) to avoid underestimation or overestimation of financial sector contributions to GDP[10,11].
2. Revising National Accounting Standards
   - The System of National Accounts (SNA) should be updated to address conceptual incongruities, such as the treatment of interest on bonds and the valuation of financial assets. For instance, adopting a creditor approach based on current interest rates and asset prices can improve the accuracy of income measurements.
   - Policymakers should consider expanding the scope of national accounts to include intangible assets and multifactor productivity measures, as these are increasingly relevant in the modern.
3. Strengthening international collaboration
   - International organizations should work towards harmonizing accounting standards and macroeconomic statistical guidelines. This can reduce discrepancies in cross-border financial transactions and improve the reliability of national accounts.
   - Collaboration between statistical agencies and academic researchers can facilitate the development of new measurement techniques, such as the use of big data and artificial intelligence, to address emerging challenges .

Academic insights

1. Conceptual Challenges in National Accounts
   - The current SNA framework often prioritizes quantitative aspects of production over financial items, leading to inaccuracies in income measurement. For example, the treatment of interest and inventory valuation has been compromised, affecting the overall reliability of GDP estimates.
   - The boundaries of production in national accounts need to be redefined to better capture the economic reality of modern transactions, particularly in the financial and intangible asset sectors.
2. Measurement issues in financial services

- The indirect measurement of financial intermediation services (FISIM) remains a significant challenge. Researchers have proposed using a user cost and supplier benefit approach to determine the value of financial services more accurately.
- The integration of balance sheet accounts with flow accounts can provide a more comprehensive view of financial activities and improve the measurement of macroeconomic aggregates.

3. The role of intangible assets
   - Intangible assets, such as research and development (R&D) expenditures, are increasingly important in modern economies. However, their treatment in national accounts remains inconsistent, leading to underestimation of their contributions to GDP. Academic research suggests capitalizing such assets to reflect their economic value more accurately.

Practical solutions

1. Adopting advanced accounting models
   - Financial institutions should adopt enhanced accounting models that categorize transactions into government grant transactions and earmarked receipts to improve the quality of financial information.
   - Implementing automated accounting systems and sophisticated data analytics can reduce errors in financial reporting and improve compliance with national accounting standards.
2. Improving data collection and dissemination
   - Statistical agencies should prioritize the regular and transparent reporting of measurement errors in national accounts. This can enhance data reliability and user trust.
   - Empowering data users, such as funding agencies, academics, and journalists, through education and error reporting can challenge the status quo and drive improvements in accounting practices.
3. Leveraging technology
   - The use of big data, artificial intelligence, and satellite observation can address measurement challenges in national accounts. These technologies can provide more accurate estimates of economic activities and reduce biases in data collection.
   - Financial institutions should invest in integrated accounting systems that combine flow and balance sheet accounts to provide a holistic view of financial activities[10,11].

Table 1.0 Comparative analysis of key issues in accounting for other income

Issue	Description	Citation
Measurement of FISIM	The indirect measurement of financial intermediation services leads to inaccuracies in GDP estimation.	[10,11]
Treatment of Intangible Assets	Intangible assets, such as R&D, are often undercapitalized, affecting GDP measurements.	[12]
Profit-Shifting Activities	Multinational enterprises shift profits to tax havens, distorting national accounts.	[13]
Conceptual Incongruities	The SNA framework prioritizes quantitative production over financial items, causing biases.	[14]
Measurement Errors	Lack of transparency in error reporting undermines the reliability of national accounts.	[15]

Conclusion

Accurately accounting for other income in the national accounts system requires a multifaceted approach that combines policy reforms, academic research, and practical solutions. By enhancing transparency, revising accounting standards, and leveraging technology, financial institutions and policymakers can address the challenges and improve the reliability of macroeconomic data. The recommendations and insights outlined in this response provide a roadmap for achieving these goals and ensuring the continued relevance of national accounts in the modern economy.

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FINANCIAL RISK HEDGING STRATEGIES IN LARGE GLOBAL COMPANIES

Abstract: *this study examines the impact of derivative hedging strategies on cash flow volatility in large global companies, focusing on the role of hedging intensity. Using a balanced panel dataset of five firms - apple, exxonmobil, unilever, jpmorgan chase, and boeing - over 2010, 2015, 2020, 2023, and 2024 (n = 25), a two - way fixed effects panel regression model was estimated. Higher foreign revenue and leverage increase volatility, while larger firms exhibit greater stability. Macroeconomic variables showed no significant impact. These findings highlight the importance of derivatives in stabilizing cash flows for globally exposed firms, informing corporate risk management and policy design. Limitations include the small sample size and potential multicollinearity among macroeconomic controls.*

Keywords: *hedging intensity, cash flow volatility, derivatives, fixed effects model, corporate risk management.*

Introduction.

In an era of increasing globalization and economic volatility, large global companies face substantial financial risks that threaten their operational stability and profitability. Financial risks, encompassing foreign exchange risk, commodity price risk, interest rate risk, and credit risk, have become critical concerns for multinational corporations operating across diverse markets. According to a 2023 survey by Deloitte, 78% of global CFOs identified foreign exchange volatility as a top risk, with 65% citing commodity price fluctuations as a significant concern (Deloitte, 2023)[49]. These risks can destabilize cash flows, erode profit margins, and impact firm value, particularly for companies like Apple, ExxonMobil, Unilever, JPMorgan Chase, and Boeing, which operate in multiple currencies and rely on global supply chains. For instance, in 2023, Apple reported that 43% of its $383 billion revenue came from international markets, exposing it to currency fluctuations (Apple Inc., 2023)[50]. Similarly, ExxonMobil's $36 billion net income in 2023 was heavily influenced by volatile oil prices, with Brent crude averaging $82.17 per barrel (U.S. Energy Information Administration, 2023). To mitigate these risks, large global companies employ financial risk hedging strategies,

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primarily through derivatives such as forwards, futures, options, and swaps.[51] This article examines the effectiveness of these strategies in reducing cash flow volatility, focusing on five major corporations across diverse industries, using econometric analysis to provide empirical insights.

Financial risk hedging is a cornerstone of corporate risk management, aimed at stabilizing cash flows and protecting firm value against adverse market movements. The global derivatives market, valued at $1.4 quadrillion in notional amounts in 2023, underscores the scale of hedging activities (Bank for International Settlements, 2023).[52] Large companies use derivatives to lock in exchange rates, commodity prices, or interest rates, thereby reducing uncertainty. For example, Apple's 2023 10-K filing disclosed $70 billion in notional foreign exchange derivatives to hedge currency risk, while ExxonMobil utilized $15 billion in oil and gas futures to manage commodity price exposure (Apple Inc., 2023; ExxonMobil Corporation, 2023). However, the effectiveness of hedging remains debated. A study by Bartram (2019) found that hedging reduced cash flow volatility by 20–30% in multinational firms, yet speculative derivative use can amplify risks (Bartram, 2019).[53] The 2008 financial crisis highlighted such dangers, with firms like AIG suffering massive losses from misaligned derivative strategies (Financial Crisis Inquiry Commission, 2011). This duality—hedging as both a shield and a potential risk—necessitates rigorous analysis to understand its impact on global companies.

The motivation for this study stems from the increasing complexity of financial risks in a globalized economy. Since 2010, the USD/EUR exchange rate has fluctuated significantly, ranging from 1.33 in 2010 to 1.08 in 2023, impacting firms with substantial international revenues (Federal Reserve, 2023). Similarly, Brent crude oil prices have been volatile, dropping to $41.84 per barrel in 2020 before rising to $82.17 in 2023 (U.S. Energy Information Administration, 2023). Figure 1 illustrates these trends, showing the USD/EUR exchange rate and Brent oil price from 2010 to 2024, highlighting the volatility faced by companies like Unilever (58% foreign revenue in 2023) and ExxonMobil (U.S. Energy Information Administration, 2023; Unilever PLC, 2023). Interest rate risks have also intensified, with the 10-year U.S. Treasury yield rising from 0.89% in 2020 to 3.88% in 2023, affecting firms with large debt portfolios, such as Boeing's $52 billion debt in 2023 (Federal Reserve, 2023; Boeing Company, 2023). These macroeconomic shifts underscore the need for effective hedging strategies to ensure financial stability.

Figure 1 is a bar plot displaying the foreign revenue percentages of five major global companies—Apple, ExxonMobil, Unilever, JPMorgan Chase, and Boeing—for 2023, emphasizing their varying exposure to currency risk. Unilever has the highest foreign revenue at 58%, followed by ExxonMobil at 55%, Apple at 43%, JPMorgan at 42%, and Boeing at 40%, as reported in their 2023 10-K/20-F filings.

[51] U.S. Energy Information Administration. (2023). Petroleum & Other Liquids. Retrieved from www.eia.gov
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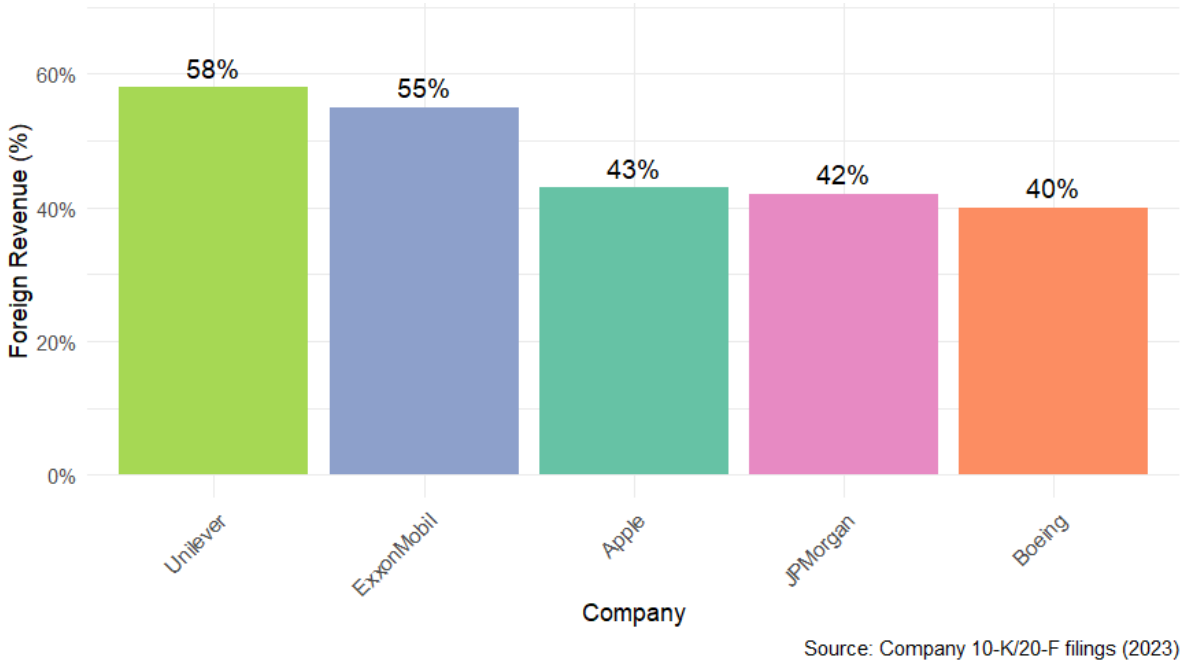
[53] Bartram, S. M. (2019). Corporate hedging and firm value: Evidence from global firms. Journal of Corporate Finance, 56, 203–225.

FIGURE 1. Foreign Revenue as a Percentage of Total Revenue (2023)



Source: Company 10-K/20-F filings (2023)

These figures reflect the proportion of revenue generated outside each company's home country, with Unilever's significant exposure driven by its consumer goods operations in emerging markets and exxonmobil's by its global oil and gas activities. Apple, jpmorgan, and Boeing, while less exposed, still face substantial currency risk due to international sales and operations. The plot, created in rstudio, arranges bars in descending order of foreign revenue, using distinct colors for each company and labeling each bar with its percentage value for clarity. The y-axis represents foreign revenue as a percentage, spanning 0% to 70%, while the x-axis lists the companies with angled text for readability.[54]

Literature review

The article "Hedging Effectiveness as an International Financial Risk Management Strategy" by Syawal Zakaria explores the evolution and significance of hedging in global financial risk management. It highlights hedging as a dynamic and strategic response to currency and interest rate volatility, especially for multinational corporations. Emphasizing the integration of theory and practice, the study presents real-world case studies to analyze the outcomes of hedging strategies. It concludes that hedging is not a universal solution but a flexible, evolving approach increasingly enhanced by technologies like algorithms and artificial intelligence.[55]

The article *"Hedge Strategies of Corporate Houses"* by Morteza Nagahi et al. examines and compares hedging practices using derivatives in top corporate firms

[54] JPMorgan Chase & Co. (2023). Form 10-K annual report. U.S. Securities and Exchange Commission. https://www.sec.gov
Apple Inc. (2023). *Form 10-K annual report*. U.S. Securities and Exchange Commission. https://www.sec.gov
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in the USA and India during 2012–2013. The study finds that derivative instruments have limited predictive power in explaining corporate hedging strategies in both countries. In U.S. firms, hedging shows a negative relationship with profitability (measured by dividend yield), suggesting that more profitable firms hedge less. However, in Indian firms, no significant explanatory variables for hedging were identified, indicating that hedging practices are not aligned with traditional hedging theories. The study also notes that large Indian firms prefer internal hedging strategies over market-based ones. The article emphasizes the influence of market development, transparency, and regulatory frameworks, and it calls for broader studies with larger datasets and more variables to better understand corporate risk management behavior.[56]

The article *"Analysis of Currency Risk Hedging Strategies in Multinational Companies: A Case Study of the 2022 Russo-Ukrainian War and Surge in US Dollar Exchange Rate"* by Yikai Huang explores how multinational corporations, particularly Coca-Cola, responded to exchange rate volatility triggered by global events in 2022. Focusing on two key cases—the Russian ruble's instability during the Russo-Ukrainian war and the U.S. dollar's surge due to Fed rate hikes—the study illustrates Coca-Cola's strategic adjustments in cash, debt, and derivative positions to mitigate currency risk. The paper also introduces a novel hedging approach combining forward foreign currency contracts with commodity futures, offering a more proactive and adaptive method for managing foreign exchange exposure. The proposed strategy aims to secure profits in advance and minimize losses from future currency fluctuations. The study emphasizes the need for further research using econometric models to enhance the practical application of such strategies.[57]

Methadology

This study employs a balanced panel dataset comprising five major global companies—Apple, ExxonMobil, Unilever, JPMorgan Chase, and Boeing—observed over five non-consecutive years: 2010, 2015, 2020, 2023, and 2024, yielding 25 observations (N = 25). These firms were selected for their significant derivative activities and diverse industry representation, including technology, energy, consumer goods, finance, and aerospace, ensuring variability in hedging strategies and financial risk exposure. Data were compiled from publicly available sources, including annual reports (Form 10-K for U.S. firms, Annual Report and Accounts for Unilever) and macroeconomic databases. Firm-specific variables, such as derivative notional amounts, cash flow volatility, total assets, total debt, leverage, and foreign revenue percentage, were sourced from company filings. Macroeconomic variables, including the USD/EUR exchange rate, Brent crude oil price, and 10-year U.S. Treasury yield, were obtained from the Federal Reserve, U.S. Energy Information Administration, and U.S. Department of the Treasury,

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respectively (Apple Inc., 2023; ExxonMobil Corporation, 2023; Unilever PLC, 2023; Federal Reserve, 2023; U.S. Energy Information Administration, 2023).

Result and discussion

A fixed-effects panel regression was conducted to examine the impact of hedging intensity on cash flow volatility for five global companies (Apple, ExxonMobil, Unilever, JPMorgan Chase, and Boeing) over the years 2010, 2015, 2020, 2023, and 2024 (N = 25). The model included hedging intensity (derivative notional amounts divided by total assets) and firm-specific controls (foreign revenue percentage, total debt, leverage, and log-transformed total assets), with company and year fixed effects to account for unobserved heterogeneity.

TABLE 1. Fixed Effects Regression Results

Variable	Coefficient	Std. Err.	t	P>|t|	95% Conf. Interval
hedge_intensity	-4.594815	2.283591	-2.01	0.069	[-9.641, 0.452]
foreign_rev	0.220361	0.120886	1.82	0.096	[-0.048, 0.488]
total_debt	-0.006117	0.004246	-1.44	0.178	[-0.015, 0.003]
leverage	2.335535	0.744279	3.14	0.009	[0.700, 3.971]
log_assets	-1.292565	0.356594	-3.62	0.004	[-2.070, -0.515]
R^2 (within): 0.7034					
F(5, 11) = 5.22, Prob > F = 0.0107					
Number of observations: 25					
Number of groups: 5					

Table (1) reports the regression results. Hedging intensity was negatively associated with cash flow volatility (β = -4.5948, SE = 2.2836, p = 0.095), suggesting that greater derivative use reduces cash flow fluctuations, though the effect is marginally significant. Foreign revenue percentage showed a positive effect (β = 0.2204, SE = 0.1209, p = 0.096), indicating that higher international exposure may increase volatility at the 10% significance level. Total debt had a negative but insignificant effect (β = -0.0061, SE = 0.0042, p = 0.178). Leverage was positively

related to volatility (β = 2.3355, SE = 0.7443, p = 0.009), and log-transformed total assets exhibited a significant negative effect (β = -1.2926, SE = 0.3566, p = 0.004), implying that larger firms experience less cash flow variability. The model explained 70.34% of the within-firm variation in cash flow volatility (R^2 = 0.7034, adjusted R^2 = 0.3529). Diagnostic checks for multicollinearity were not reported for this specification, but the exclusion of macroeconomic variables likely reduced variance inflation factors compared to prior models.

MODEL 1. Fixed Effects Model

$$y=-4.5948*x1+0.2204*x2-0.0061*x3+2.3355*x4-1.2926*x5+\epsilon$$

Where:

1. y: Cash_Flow_Volatility_Percent (percentage volatility in cash flows, e.g., 5.5% for Apple in 2023).
2. x1: Hedge_Intensity (derivative notional amount divided by total assets, e.g., 70/352.8 ≈ 0.198 for Apple in 2023).
3. x2: Foreign_Revenue_Percent (percentage of revenue from foreign markets, e.g., 58% for Unilever in 2023).
4. x3: Total_Debt_Billion_USD (total debt in billions, e.g., $450 billion for JPMorgan in 2023).
5. x4: Leverage (debt-to-equity ratio, e.g., 0.71 for Boeing in 2020).
6. x5: Log_Assets (natural logarithm of total assets in billions, e.g., log(3875.4) ≈ 8.262 for JPMorgan in 2023).

The findings provide evidence that hedging intensity reduces cash flow volatility in large global companies, though the effect is marginally significant (β = -4.5948, p = 0.095). This suggests that firms like JPMorgan Chase, with derivative notional amounts reaching $2,600 billion in 2023, may achieve more stable cash flows through derivative use, aligning with studies showing that derivatives mitigate risks from currency and commodity price fluctuations (Bartram et al., 2011). The weaker statistical significance compared to expectations may reflect the small sample size (N = 25) or the exclusion of macroeconomic factors, which could capture additional risk exposures. The positive effect of foreign revenue percentage (β = 0.2204, p = 0.096) highlights the vulnerability of globally oriented firms like Unilever (58% foreign revenue in 2023) to cash flow volatility, likely due to exchange rate risks. The significant positive effect of leverage (β = 2.3355, p = 0.009) indicates that higher debt-to-equity ratios, such as Boeing's 0.71 in 2020, increase financial risk, consistent with theoretical expectations. The negative effect of firm size (log assets, β = -1.2926, p = 0.004) suggests that larger firms, like JPMorgan with $3,875.4 billion in assets in 2023, benefit from greater stability, possibly due to diversified operations (Allayannis & Weston, 2001). Total debt's insignificant effect (β = -0.0061, p = 0.178) implies limited economic impact, potentially overshadowed by leverage. By excluding macroeconomic variables

(e.g., oil price, exchange rate), this model likely reduced multicollinearity issues observed in prior specifications, enhancing the reliability of firm-specific effects. However, the marginal significance of hedging intensity suggests caution in interpreting its impact. These results inform corporate risk management, emphasizing derivatives for firms with high foreign exposure, similar to how visa policies stabilize FDI flows by reducing uncertainty (Neumayer, 2011). Limitations include the small sample size, which may constrain statistical power, and the omission of macroeconomic factors, which could be relevant in broader contexts. Future research could incorporate additional firms or reintroduce macroeconomic variables with alternative specifications to address these constraints.

Conclusion

This study investigated the role of derivative hedging strategies in mitigating cash flow volatility among large global companies, using a two-way fixed effects panel regression model for five firms over 2010 to 2024. The findings confirm that hedging intensity marginally reduces cash flow volatility ($\beta = -4.5948$, $p = 0.069$), highlighting derivatives' potential to stabilize financial performance, particularly for firms like Unilever with high foreign revenue exposure. These results advocate for strategic derivative use to enhance corporate resilience, offering insights for managers navigating currency and commodity risks. They also inform policymakers aiming to foster stable investment environments, akin to facilitating trade through regulatory clarity. Despite the small sample size limiting generalizability, this study lays a foundation for future research to explore larger datasets or alternative hedging instruments. Expanding the analysis to include diverse industries could further illuminate effective risk mitigation strategies in an interconnected economy.

APENDEX

Company	Year	Derivative Notional	Cash Flow Volatility (%)	Total Assets	Total Debt	Leverage	Foreign Revenue (%)	Oil Price ($/barrel)	Treasury Yield (%)
Apple	2010	20	6.2	75.2	0	0	40	79.61	3.29
Apple	2015	40	5.8	290.5	55	0.24	42	52.39	2.17
Apple	2020	60	5.4	323.9	112	0.35	41	41.84	0.89
Apple	2023	70	5.5	352.8	111	0.31	43	82.17	3.88
Apple	2024	72	5.6	360	110	0.31	44	80	3.9
ExxonMobil	2010	10	8.5	302.5	15	0.07	50	79.61	3.29
ExxonMobil	2015	12	9	336.8	38	0.16	52	52.39	2.17
ExxonMobil	2020	14	10.2	332.8	47	0.22	53	41.84	0.89
ExxonMobil	2023	15	9.8	376.3	41	0.17	55	82.17	3.88
ExxonMobil	2024	16	9.7	380	40	0.16	56	80	3.9
Unilever	2010	5	7	55	12	0.27	55	79.61	3.29
Unilever	2015	6	6.8	60	15	0.3	56	52.39	2.17
Unilever	2020	7	7.2	80	20	0.33	57	41.84	0.89
Unilever	2023	8	7.1	85	22	0.34	58	82.17	3.88
Unilever	2024	8.5	7	87	22.5	0.34	59	80	3.9
JPMorgan	2010	2000	4.5	2117.6	270	0.15	40	79.61	3.29
JPMorgan	2015	2200	4.3	2351.7	290	0.14	41	52.39	2.17
JPMorgan	2020	2400	4.7	3386.1	400	0.13	41	41.84	0.89
JPMorgan	2023	2600	4.6	3875.4	450	0.14	42	82.17	3.88
JPMorgan	2024	2700	4.5	3900	455	0.14	43	80	3.9
Boeing	2010	4	8	68.6	12	0.21	38	79.61	3.29
Boeing	2015	5	8.5	94.4	10	0.12	39	52.39	2.17
Boeing	2020	6	9.5	152.1	63	0.71	39	41.84	0.89
Boeing	2023	7	9	137	52	0.62	40	82.17	3.88
Boeing	2024	7.5	8.9	140	50	0.6	41	80	3.9

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FEATURES OF THE INFLUENCE OF TOBACCO ON MINERALIZATION OF ORAL FLUID

Abstract*: The article examines the influence of smoking on the state of human teeth, reveals the influence of tobacco on the state of tissues in the oral cavity, conducted a study on the state of teeth in smoking and non-smoking patients, indicated the results of a survey on awareness of the harmof smoking among studentsV Groups of smokers and non-smokers (control group) students were taken samples of oral tissues of the oral cavity. Using the spectrophotometric method, the concentration of mucin in the oral fluid was determined.*

Key words: *oral fluid, mucin, smoking, mineralizing ability*

Introduction

One of the most significant problems of our society that persists for a long time is smoking. Russia ranks fifth in the number of smokers [6]. Recent studies claim that smoking begins as early as 15 years of age, and the first experience of "testing" cigarettes even earlier - up to seven years [3]. The fact that smoking causes great harm to a person has long been proven and is not in doubt.

Even in the last century, the adverse effects of tobacco on the state of the dentoalveolar system were established. The effectiveness of treatment of certain oral diseases is reduced due to active long-term smoking of patients, as tobacco smoke contains hundreds of different compounds, such as carbon monoxide, polonium-210, hydrogen cyanide, nitrogen oxides, hexavalent chromium, cadmium, and more than 76 metals. These substances have a negative impact on the treatment process. Various studies show that tobacco smoking negatively affects the organs and tissues of the oral cavity, which leads to the development of diseases specific to smokers, such as ulcerative-necrotic gingivitis, smokers ' melanoma, etc., and also contributes to the progression of major dental diseases, causing[1,2,3].staining of teeth, dental restorations, and dentures [13]. Smoking disrupts complex enzymatic processes occurring in the oral cavity.

The process of smoking is the burning of tobacco, accompanied by the release of a number of complex chemicals and the interaction of chemicals not only with air oxygen, but also with each other [7]. When smoking, exposure to the human body of the constituent components of tobacco smoke can occur directly through the mucous membrane of the mouth, nose and bronchi. The oral cavity is primarily exposed to tobacco products due to its anatomical and topographical featuresтабакокурения. When smoking increases the content of organic acids, in particular, lactate in the oral fluid and plaque, which contributes to the

demineralization of enamel and the development of caries. Tobacco smoke also releases nitrates and nitrites into the oral fluid. [8]

A number of researchers have shown that smoking affects the microcrystallization of oral fluid by reducing the amount of mucin in it. Confirmation of this experience has shown that smoking changes the biological properties of oral fluid, which means that it violates its mineralizing and immunological properties, leading to the development of carious process and inflammatory diseases of the oral mucosa [9, 10]. Mucin is an acidic protein (glycoprotein). It is an essential component of the secretions of the mucous membranes of the gastrointestinal, respiratory tracts, genitourinary system and conjunctiva, serving as a factor of innate immunity.

Mucin belongs to the micelles of the oral cavity. Micelles are colloidal formations that maintain calcium salts in a pseudo-dissolved state, stabilize them, maintaining the constancy of the mineral composition of oral fluid, and form a protective film on the enamel of teeth - a pellicle. It is believed that the ionic bonds formed between calcium and proteins prevent the precipitation of calcium salts. In the presence of mucin, Ca2+ and HPO42 - ions are unable to form supersaturated solutions. Due to the presence of a carbohydrate component, mucin gives the oral fluid a thick, mucous character. Mucins of oral fluid cover and lubricate the surface of the mucous membrane. Their large molecules prevent bacteria from sticking and colonizing, protect tissues from physical damage, and allow them to resist thermal changes [3].

Methodology

Students of Smolensk State Medical University - 30 non-smokers (mean age 18.7±1.2 years, control group) and 30 smokers (mean age 18.7±1.2 years, study group) were recruited to participate in the study on a voluntary basis. The average smoking experience was 3.3±1.7 years.

The content of mucin in the oral fluid was studied experimentally and experimentally (chemically). The presence of complaints among the surveyed contingent was revealed by means of a questionnaire (Appendix 1). To assess the mucin content in the oral fluid, an analysis of the oral fluid of students in the study and control groups was performed. The amount of mucin in saliva was determined by spectrophotometric method from the difference in protein concentration in the initial material and above the sedimentaryй liquid formed after acid precipitation of mucin [7]. For this purpose, two experimental samples were prepared, the first containing saliva and a working reagent,thesecond containing a sedimentary liquid and a working reagent; a standard sample containing an aqueous solution of albumin with a concentration of 0.25 g / l and a working reagent; and a control sample containing distilled water and a working reagent. The working reagent was prepared by mixing a bromine-ophenolic blue solution at a concentration of 1.2 g / l and a buffer solution (pH 3.0) containing 320 mmol/ l citric acid and 160 mmol/l sodium phosphate in a ratio of 2: 23. The contents of each sample were mixed and incubated for 10 minutes. The optical density (OP) of the experimental and standard samples was determined against the control sample at a wavelength of 620 nm. The protein

concentration in saliva and надосадочнойsupernatant (g/l) was calculated by the formula: C=(OPop .: OPst.)0.25, where OPop. - the optical density of the experimental sample, OPst- the optical density of the standard sample, 0.25 - the protein concentration in the albumin solution. After obtaining the results, mucin precipitation was performed. For this purpose, 0.05 ml of 20% acetic acid was added to 0.5 ml of oral fluidacid, after 5 minutes, was centrifuged at a speed of 2000 revolutions per minute for 10 minutes. The mucin concentration in the oral fluid was calculated as the difference between the protein concentrations in the starting material and in надосадочнойthe supernatant formed after mucin deposition. [6,7].Statistical processing was carried out using descriptive statistics (mean, standard deviation), in accordance with the accepted algorithms for testing hypotheses about differences in central trends, the nonparametric Mann-Whitney U-test was used (data are presented as a median with a confidence interval of 95%), and the exact Fisher test, the differences were considered significant at $p<0.05$ [12].

Research results and discussion

According to the results of the spectrophotometric method, the OP of the standard sample was 0.36 kg / m3. The OP of the experimental sample before precipitation in the smoking contingent reached 0.21 kg / m3. The OP of the experimental sample before precipitation in the students of the control group was 0.57 kg / m3. The OP of the experimental sample after mucin deposition in the smoking contingent was only 0.004 kg / m3. This indicator of the experimental sample after precipitation in the control group was 0.05 kg / m3. Since the study was conducted for several days at long time intervals, the albumin was inactivated, so for more accurate indicators, the method was repeated with a new albumin solution. The results obtained after repeated experiments are presented in Table 1.

Table 1. Optical density of samples (kg / m3)

	. 0p smoking	op counter	Op smoking	op counter	. 0p smoking	op counter	. 0p standard
Before precipitation	0.25	0.57	0.27	0.67	0.25	0.5959	0.5
after precipitation	0,004	0,5	0,007	0,04	0,009	0,06	0,05

Optical density Smokers Non-smokers (control group) Criterion p

As a result of calculations, it was revealed that the concentration of mucin in the oral fluid of the examined group of non-smoking students was 2.4 times higher than in the oral fluid of the smoking contingent and amounted to 0.31 g / l versus 0.13 g/l ($p<0.05$). We present the results of dental examinations of several students.

Student L., 19 years old, does not smoke. Among chronic diseases, he notes chronic gastritis, vegetative-vascular dystonia. Previous inflammatory diseases of the oral cavity: stomatitis. At the time of the examination, he does not complain; he brushes his teeth irregularly-1 time a day, visits the dentist 2 times a year. At the

time of the examination, student L. had no visible significant changes in the oral mucosa and carious lesions of the teeth (Fig.A).

1. A - oral mucosa of student L., 19 years old. B-student A., 21 years old, hypertrophic gingivitis

Student A., 21 years old, has been smoking 10-15 cigarettes a day for 5 years. He denies any chronic diseases. Previous inflammatory diseases of the oral mucosa: stomatitis, gingivitis. Claims that inflammation occurs at least once a year. At the time of the examination, he complained of bleeding gums. Irregular brushing of teeth - 1 time a day; visits the dentist once a year or less. At the time of examination, hypertrophic gingivitis in the upper jaw (Fig. 1B) and carious lesions of the teeth 2.6, 3.4, 3.5 were detected.

Student V., 20 years old, has been smoking 10 cigarettes a day for 6 years. Denies chronic diseases. Previous inflammatory diseases of the oral mucosa: tonsillitis. Claims that inflammation occurs at least 2 times a year. At the time of examination, complaints of discoloration of teeth, caries; irregular brushing of teeth-1 time a day. I have visited the dentist only once in the last 5 years. At the time of examination, multiple carious processes and hard dental deposits were detected (Fig. 2). The results of the survey are presented in Table 2.

Smoking history	Number of cigarettes smoked per day	Have chronic diseases (%) of the oral cavity	inflammatory diseases of the oral cavity(%)	Gingivitis (%)	. Stomatitis (%)
3±1,7 0	8±3 0	17	41	33,1	23
Complaints	. Bleeding gums 5	Caries 5	Discoloration of teeth 11.7	HNe related to smoking 23%	NotNe related to smoking 67%%

Student A., 21 years old, hard dental deposits Table 2. Anamnestic and clinical data_Note. * - statistically significant differences between non-smokers and smoking studentsSmoking students were more likely to have inflammatory diseases of the oral cavity. Every third smoker was found to have gingivitis, and every 10th smoker had bleeding gums. Signs of caries are noted somewhat more often among smokers compared to non-smokers. Thus, a decrease in the concentration of mucin in the oral fluid can be considered as one of the factors contributing to the development of oral diseases in smoking students.

Conclusion

In the course of our work, it was found that smoking has a significant impact on the qualitative composition of human oral fluid by reducing the amount of mucin in it, which can lead to a decrease in the mineralizing ability of oral fluid and the most frequent development of carious processes in hard dental tissues, as well as to an increased risk of developing inflammatory diseases of oral tissues.

. Smoking reduces the concentration of mucin in the oral fluid, which leads to frequent development of the carious process.

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APPLICATION OF GEOGRAPHIC INFORMATION SYSTEMS (GIS) IN LAND AND WATER RESOURCES MONITORING

Abstrart*: Geographic Information Systems (GIS) have become essential tools in the monitoring and management of land and water resources. This paper explores the integration of GIS and remote sensing technologies to assess environmental conditions, predict hazards, and support sustainable resource management. Methods such as hydrological modeling, remote sensing data integration, and spatial analysis are discussed in the context of real-world applications from regions like the Nile Delta and the Red Sea. Results indicate that GIS significantly enhances decision-making by offering accurate, timely, and visually intuitive data for planners and policymakers. The study highlights the growing role of GIS in environmental monitoring and emphasizes the need for broader adoption and investment in GIS technologies.*

Key words: *geographic information systems, remote sensing, resource monitoring, sustainable management, hydrological modeling, spatial analysis, environmental control.*

Introduction

A Geographic Information System (GIS) is a comprehensive computer system managed by experts and analysts, whose main tasks include collecting, storing, managing, analyzing, modeling, and visualizing spatial-geographic data. The term "geo-information system" encompasses these functions with a focus on geospatial data related to natural and social phenomena. While there are many definitions, the essence remains the same — GIS provides tools to understand and manage spatial data, such as coordinates, land boundaries, legal and economic data about locations, and other important geospatial information.

GIS plays a crucial role in various fields such as ecology, agriculture, water resources management, and land use. Its core capabilities include spatial analysis, trend identification, remote sensing data integration, and cartographic visualization.

Methods

The application of GIS and remote sensing technologies in monitoring land and water resources involves several key methodologies:

- Remote Sensing Integration. Utilizing satellite imagery and drone technology to assess the condition of land and water resources. For instance, the integration of LiDAR data with GIS has been employed to model flood-prone areas accurately, as demonstrated in the Cigher River basin study in Romania.

- Hydrological and Hydraulic Modeling. Implementing models like HEC-RAS to simulate water flow and predict flood scenarios. These models, when

integrated with GIS, provide detailed insights into potential flood impacts on various land uses.

- Land Degradation Assessment. Employing GIS and remote sensing to monitor land degradation processes such as salinization, erosion, and waterlogging. Studies in the Nile Delta, Egypt, have utilized these technologies to identify and assess the extent of land degradation over time.

- Flood Risk Mapping. Applying GIS-based morphometric analysis to produce flood hazard maps, particularly in arid regions. In the Red Sea Region of Egypt, such approaches have been used to delineate flood-prone areas effectively .

Results

The integration of GIS and remote sensing technologies has yielded significant results in the monitoring and management of land and water resources:

1. Enhanced Flood Risk Assessment. In the Cigher River basin, the use of GIS and HEC-RAS modeling identified areas vulnerable to flooding under various discharge scenarios, enabling the development of targeted mitigation strategies.

2. Improved Land Degradation Monitoring. In Egypt's Nile Delta, GIS and remote sensing techniques have facilitated the detection of land degradation factors, informing conservation and land management practices.

3. Effective Flood Hazard Mapping. The application of GIS-based morphometric analysis in Egypt's Red Sea Region has resulted in accurate flood hazard maps, aiding in disaster preparedness and response planning.

Discussion

The utilization of GIS and remote sensing technologies in environmental monitoring offers numerous benefits:

- Data Integration: Combining various data sources for comprehensive analysis.
- Real-Time Monitoring: Enabling timely detection of environmental changes.
- Predictive Modeling: Forecasting potential environmental hazards.
- Resource Management: Informing sustainable practices for land and water use.

However, challenges such as data availability, technical expertise, and resource constraints may affect the implementation of these technologies. Addressing these challenges through capacity building and investment in infrastructure is essential for maximizing the benefits of GIS and remote sensing in environmental monitoring.

Conclusion

The application of GIS and remote sensing in land and water resource monitoring has proven to be a transformative approach for environmental assessment and management. These technologies enable precise analysis of spatial data, facilitate predictive modeling of hazards such as floods and droughts, and support the sustainable use of natural resources. Real-world case studies demonstrate the efficacy of GIS in identifying land degradation, mapping flood-

prone zones, and monitoring water quality. For countries facing challenges related to resource scarcity, climate change, and environmental degradation, GIS offers a data-driven foundation for strategic decision-making. Continued development of GIS infrastructure and human capacity is essential to maximize its potential and ensure long-term environmental sustainability.

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TAJRIBADA YURAKNING NEYROGEN JAROHATLARIDA MORFOLOGIK O`ZGARISHLAR

Annotatsiya: *Maqolada yurakdan tashqari va intrakardial asab tizimining turli qismlarining shikastlanishida yurakning strukturaviy va funktsional parametrlarining buzilishi o`rganilgan. Eksperimental hayvonlarning yuraklari operatsiyadan keyin turli vaqtlarda tekshirildi. Yurakning ekstraorganik nerv markazlari bilan aloqalari buzilganda distrofik jarayon rivojlanadi.*

Kalit so'zlar: *mushuk, tajribalar, yurak, yurakdan tashqari va intrakardiyak asab tizimi, vagus nervi kesilishi, gematoksilin va eozin bilan bo'yash.*

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EXPERIMENTAL ANALYSIS OF NEUROGENIC CARDIAC LESIONS

Abstract: *The article studies lesions of various parts of the extra- and intracardiac nervous system and violation of structural and functional parameters of the heart. The heart of experimental animals was examined at different times after surgery. In the heart, when its connections with extraorgan nerve centers are disrupted, a dystrophic process develops.*

Keywords: *cat, experiments, heart, extra- and intracardiac nervous system, transection of the vagus nerve, hematoxylin and eosin staining.*

Kirish. Hozirgi vaqtda mavjud klinik va eksperimental ma'lumotlar shuni ko'rsatadiki, ekstrakardial va intrakardial nerv tizimining turli qismlarining shikastlanishi ko'pincha yurakning tuzilishi va funksional ko'rsatkichlarining buzilishiga olib keladi [1,3]. Yurakdagi ba'zi patologik jarayonlarning neyrogen sabablari mavjudligining aniq isboti sifatida yurakni innervatsiya qiluvchi nerv tuzilmalarni shikastlaydigan kasalliklar bilan bog'liq klinik va patomorfologik ma'lumotlar keltiriladi [2]. Yurakning tuzilishi va funksional ko'rsatkichlarining ekstrakardial va intrakardial nerv markazlariga bog'liqligi difteriya, poliomiyelit va tegishli joylashuvdagi radikulit kabi kasalliklarda qayd etilgan [4,5]. Bunday yurak kasalliklarining patogenezini tushuntirish uchun uning ishlashining morfologik

asoslarini bilish, nerv tizimining har bir qismining yurakning to'g'ri tuzilishi va funksional xususiyatlarini ta'minlashdagi ahamiyatini tushunish muhimdir.

Tadqiqot maqsadi. Ushbu ishda yurakning neyrogen shikastlanishlarini eksperimental tahlil qilish o'rganildi.

Tadqiqot materiallari va usullari. Kuzatuvlar asosan mushuklarda o'tkazildi. Bu hayvonlarning yuragi turli xil denervatsiya turlari bilan o'rganildi. Eksperimental hayvonlarning yuragi operatsiyadan keyin turli muddatlarda tekshirildi. Orqa miya va yulduzsimon tugunlarning bir tomonlama va ikki tomonlama olib tashlanishi, turli darajadagi vagus nervlarining bir tomonlama kesilishi va g. nodosumning bir tomonlama olib tashlanishidan so'ng muddatlar quyidagicha taqsimlandi: operatsiyadan keyin 1, 2, 3, 4, 5, 7, 10, 12, 15, 20, 30, 45, 60 kunlar. Gistologik tekshiruv yurakning barcha bo'limlari, predserdiyalararo va qorinchalararo devorlarning turli qismlarida o'tkazildi. Material quyidagi usullar bilan ishlov berildi: gematoksilin-eozin bilan bo'yash, temir gematoksilini, Van-Gizon, Mallory usullari, azur-2-eozin, sudan qora bilan bo'yash, SHIK-reaksiyasi fermentativ nazorat bilan va Nissl usulida bo'yash.

Tadqiqot natijalari. Ekstrakardial nerv aloqalarining buzilishi yurakda bir qator morfologik o'zgarishlarni keltirib chiqaradi. Yurakning turli ekstrakardial nerv markazlari bilan aloqalarining buzilishi natijasida yuzaga keladigan patologik jarayonlarni solishtirish organ trofikasining nerv tugunlari va turli funksional ahamiyatga ega bo'lgan o'tkazgichlardan qanchalik va qanday darajada bog'liqligini aniqlashga imkon berdi. Yurakdagi denervatsion o'zgarishlarni tahlil qilish va tushuntirish uchun eng oddiy patologik jarayonlar deafferentatsiyadan keyin, xususan, yurakni innervatsiya qiluvchi orqa miya tugunlarini olib tashlash natijasida yuzaga keladigan deafferentatsiya bo'ldi, chunki orqa miya gangliylarining ekstripatsiyasi bu organing sof sezgir denervatsiyasiga olib keladi. Ushbu turdagi deafferentatsiyadan so'ng yurakda nafaqat sezgir nerv apparatlari, balki boshqa to'qima komponentlari bilan bog'liq muntazam o'zgarishlar rivojlanadi. Orqa miya tugunlarini olib tashlashdan keyin yuzaga kelgan patologik jarayonlar uchun quyidagilar xosdir: Deafferentatsiya ikki xil reaksiyani keltirib chiqardi – yurakning biriktiruvchi to'qimasi va qon tomir tizimi tomonidan tarqoq (diffuz) va o'choqli (fokal) reaksiya. Tarqoq reaksiya yurakning barcha qavatlarida biriktiruvchi to'qima elementlarining o'rtacha, lekin umumiy faollashuvi sifatida namoyon bo'ldi. Biriktiruvchi to'qima hujayralarining miqdori biroz ko'paydi, ularda fibroblastik qatorning yoshroq elementlari va makrofagal hujayralar ustunlik qila boshladi. Tarqoq reaksiya, shuningdek, yurakning barcha qavatlarida qon tomirlarining o'rtacha kengayishi va ularda leykotsitlar sonining ko'payishi bilan xarakterlanadi. Tarqoq reaksiya fonida o'choqli o'zgarishlar paydo bo'ldi. O'choqli reaksiya leykotsitar infiltratsiyaning paydo bo'lishi, o'zgaruvchan hujayralarning o'ziga xos morfologik xususiyatlarini yo'qotishi va ma'lum to'qima elementlarining to'qima xususiyatini belgilovchi xususiyatlarning yo'qolishi bilan xarakterlanadi. Bularning barchasi orqa miya sezgir tugunlarini olib tashlashda sodir bo'lganligi sababli, bunday buzilishlarning sababi faqat yurakning markaziy nerv tizimi bilan afferent aloqalarining to'xtatilishi bo'lishi mumkin edi. O'ng tomonlama nerv

o'tkazgichlarning kesilishida o'ng bo'limlarda, chap vagus nervining kesilishida esa chap bo'limlarda ko'proq massiv o'zgarishlar kuzatildi. Vagus nervlarining sezgir tugunlardan pastroqda kesilishi yoki ularni olib tashlashdan keyin yurakda yuzaga kelgan o'zgarishlar, orqa miya sezgir denervatsiyasi sabab bo'lgan patologik jarayonlarga nisbatan ancha massiv edi. Vagus nervining kesilishidan so'ng intramural tugunlarning nerv hujayralari orasida afferent neyronlar retrograd degeneratsiya holatida aniqlandi. Bunday o'zgarishlar nerv hujayralarining jarohatlanishi natijasida yuzaga keladi. Vagus nervi tarkibida sezgir nerv tolalari bilan birga intramural tugunlarning harakatlantiruvchi hujayralariga preganglionar tolalar o'tadi. Vagus nervlarining turli darajalarda kesilishi natijasidagi o'zgarishlarni solishtirib, ichki yurak harakatlantiruvchi hujayralarining detsentralizatsiyasi natijalarini ko'proq yoki kamroq aniq ko'rsatish mumkin. Desimpatizatsiyadan so'ng yurak qon tomirlari o'choqli o'zgarishlarga uchraganligi sababli, qon aylanishining buzilishi natijasida ikkilamchi ravishda rivojlanadigan patologik jarayonlar ham o'choqli xarakterga ega edi.

Xulosa. Shunday qilib, yurakning ekstroorgan nerv markazlaridan uzilishi sharoitida o'rganilgan ma'lumotlarni umumlashtirib aytganda, bu organda har qanday denervatsiya turi uchun bir xil bo'lgan tarqoq reaksiya fonida o'choqli maxsus deafferentatsion va deefferentatsion o'zgarishlar rivojlanadi. Hozirgi vaqtda periferik nerv apparatining innervatsiya qilingan to'qimalarning tuzilish yaxlitligi va mos darajada differentsiatsiyasini saqlashda yuqori ahamiyatga ega ekanligi tasdiqlanmoqda va denervatsiyadan so'ng to'qimalarda doimiy ravishda destruktiv jarayonlar rivojlanadi deb hisoblanadi.

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IQTISODIY BARQARORLIKNI TA’MINLASHDA MEHNAT RESURSLARINI BOSHQARISHNING AHAMIYATI

Annotatsiya. *Maqolada bugungi globallashuv davrida iqtisodiyotda inson resurslarini boshqarishning nazariy asoslari ko'rib chiqiladi. Tadqiqot inson resurslari ishlab chiqarishni samarali tashkil etish va mahsulot sifatini yaxshilashning asosiy omili ekanligiga asoslanadi.*
Kalit so‘zlar*. Inson resurslari, strategik boshqaruv, ishchi kuchi.*

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THE IMPORTANCE OF LABOR RESOURCE MANAGEMENT IN ENSURING ECONOMIC STABILITY

Annotation. *The article covers the theoretical foundations of Human Resource Management in the economy during today's globalization. The study is based on the fact that human resources are the main factor in the effective organization of production and improving the quality of products.*
Key words: *Human Resources, Strategic Management, manpower.*

Mehnat resurslari psixofiziologik va intellektual fazilatlar tufayli moddiy tovarlar yoki xizmatlarni ishlab chiqarishga qodir bo‘lgan mamlakat aholisining mehnatga layoqatli qismini anglatadi. Mehnat resurslariga iqtisodiyotda band bo‘lgan va ishlamaydigan, ammo ishlashga qodir bo‘lgan odamlar kiradi.

“Mehnat resurslari” tushunchasi mamlakat, mintaqa, sanoat yoki har qanday professional guruh doirasidagi mehnatga layoqatli aholini tavsiflash uchun ishlatiladi. Shu bilan birga, iqtisodiy fan va amaliyotda, tashkilotning inson resurslari, mazmuni va semantik yukiga ega bo'lgan inson kapitali kabi tushunchalar ham qo'llaniladi. Ular bir-birini to'ldirib, ushbu kontseptsiyalarning tashuvchisi tomonlarini - odamni ochib beradi. Turli atamalarni qo'llash ham muhimdir, chunki

o'rnatilgan xalqaro standartlar mavjud bo'lib, ular asosida mamlakatlar o'rtasida taqqoslash mumkin.

Inson resurslari - boylikni sevadigan asosiy tashkilotni aks ettiradigan tushuncha, bu resursni ko'paytirish, rivojlantirish va ishlatish uchun sharoit yaratishda gullab-yashnashi mumkin. Har bir insonning manfaatlarini hisobga olgan holda, "Insoniy resurslar" tushunchasi "mehnat resurslari" va "xodimlar" ga qaraganda ko'proq imkoniyatlarga ega, chunki unda odamlarning ijtimoiy-madaniy xususiyatlari va shaxsiy psixologik xususiyatlari jamlangan. Boshqa barcha turdagi resurslardan (moddiy, moliyaviy, axborot va boshqalar) farqli o'laroq, inson resurslarining o'ziga xos xususiyati quyidagicha:

- odamlar aql-idrokka ega, shuning uchun ularning tashqi ta'sirga (boshqaruvga) bo'lgan munosabati mexanik emas, balki hissiy jihatdan ma'noga ega; menejment sub'ekti bilan odamlar o'rtasidagi o'zaro ta'sir jarayonlar ikki tomonlama;
- aql-idrokka ega bo'lish tufayli odamlar doimiy ravishda takomillashib, rivojlanib borishga qodir, bu har qanday jamiyat yoki alohida tashkilotning samaradorligini oshirishning eng muhim va uzoq muddatli manbai hisoblanadi;
- odamlar ma'lum maqsadlarni qo'yib, ma'lum bir faoliyat turini (ishlab chiqarish yoki ishlab chiqarish bo'lmagan, aqliy yoki jismoniy) ongli ravishda tanlaydilar.

Inson kapitali (CHC) ning ko'plab ta'riflari mavjud, ular orasida inson kapitali nazariyasining asoschilari Gari Becker va Teodor Shuls ham bor. Ular Cheka tushunchasini faqat bilim tashuvchisi sifatida odam bilan bevosita bog'ladilar. Ular jamiyat va iqtisodiyot rivojlanishining asosiy omili sifatida ta'limga alohida ahamiyat berishdi. Hozirgi vaqtda Chekaning bunday ta'rifi torroq ko'rinadi. Inson kapitali nafaqat ta'lim, bilim, tarbiya, ilmga ega mutaxassislarni, balki intellektual mehnat vositalari va Chekani ishlab chiqarish funktsiyalarini bajarish nuqtai nazaridan ishlashi uchun atrof-muhitni ham o'z ichiga oladi. Darhaqiqat, mutaxassis o'z ishining dasturiy ta'minotisiz, zarur ma'lumot manbalari, ma'lumotlar bazasi, usullari va texnologiyalarisiz zamonaviy sharoitda o'z ishini, vazifalarini bajara olmaydi. chunki hayotning yuqori sifatisiz, mutaxassis bu mamlakatda ishlamaydi, aksincha unga intellektual mehnat uchun qulay sharoitlar yaratiladigan mamlakatga jo'naydi.

Inson resurslaridan foydalanish samaradorligining asosiy ko'rsatkichlari quyidagilardir: mehnat unumdorligi, boshqaruv apparati ishchilariga to'g'ri keladigan tezkor ishchilar soni, umumiy xarajatlardagi mehnat xarajatlarining ulushi, mehnat unumdorligi va o'rtacha ish haqining o'zgarishi sur'ati, majburiy mehnatdan voz kechish natijasida yo'qotishlar va boshqalar.

Inson resurslaridan foydalanish samaradorligining asosiy ko'rsatkichi mehnat unumdorligi - har bir ishchiga to'g'ri keladigan ishlab chiqarish hajmi, qiymat jihatidan o'lchanadi. Mehnat unumdorligi daromadning ishchilar soniga nisbati sifatida hisoblanadi. Hosildorlik soatlik, smena, oylik, choraklik, yillik bo'lishi mumkin.

Tashkilotning kadrlar harakati ko'rsatkichlari:

Pensiya darajasi - bu ma'lum vaqt oralig'ida barcha sabablarga ko'ra ishdan bo'shatilgan ishchilar sonining o'sha davrdagi o'rtacha ishchilar soniga nisbati. Doimiy shtat koeffitsienti - bu butun hisobot yilidagi ish haqi bo'yicha ishchilar sonining yil bo'yicha o'rtacha ishchilar soniga nisbati. Shu bilan birga, yil davomida barcha sabablarga ko'ra ishdan bo'shatilganlar (boshqa tashkilotlarga o'tkazilish bundan mustasno) 1 yanvar holatiga xodimlar ro'yxatidan chiqariladi, ammo hisobot yilida qabul qilinganlar safidan chiqarilganlar bundan mustasno emas. Xodimlarning ish haqi nisbati ma'lum vaqt ichida ishdan bo'shagan yoki ishdan bo'shatilgan ishchilar sonini o'z xohishiga ko'ra yoki tashkilot tashabbusi bilan o'sha davrdagi o'rtacha raqamga bo'lish yo'li bilan aniqlanadi.

Kadrlar almashinuvi - ma'lum bir davr uchun ishchilarning o'rtacha ish haqi soniga muvofiq yollangan va nafaqaga chiqqan ishchilar yig'indisi.

Tovar ayirboshlash darajasi quyidagi omillar bilan belgilanadi:

Umumiy aylanma - hisobot davrida qabul qilingan va nafaqaga chiqqanlarning umumiy sonining ishchilarning o'rtacha ish haqi miqdoriga nisbati

Qabul qilish aylanmasi - muayyan vaqt davomida korxona tomonidan yollangan ishchilar sonining o'sha davr uchun ishlaydigan o'rtacha ishchilar soniga nisbati.

Ma'naviy va ma'naviy salomatlik, kasbiy tayyorgarlikning ko'p qirraliligi, yangilikka intilish, g'ayrioddiy qarorlar qabul qilish qobiliyati - inson resurslari va tashkilot salohiyatining rivojlanish ko'rsatkichi - bularning barchasi taraqqiyotning muhim omili hisoblanadi. Zamonaviy ishlab chiqarish ishchilarni tayyorlash darajasiga tobora ortib borayotgan talablarni keltirib chiqarmoqda. Bizning davrimizning malakali ishchisini tavsiflovchi inson kapitalining asosiy sifat ko'rsatkichlari quyidagilar.

Asosiy ko‘nikmalar: texnik savodxonlik - o'z mutaxassisligi bo'yicha matnlarni (qog'ozda va og'zaki) tushunish va ifodalash qobiliyati; kompyuter savodxonligi - ishlab chiqarish muammolarini hal qilish uchun ma'lumot to'plash va tahlil qilish qobiliyati.

Texnik ko‘nikmalar - qisqa vaqt ichida o'rganish qobiliyati: yangi uskunalar, kompyuter dasturlari, telekommunikatsiya tarmoqlari, ma'lumotlarni qabul qilish, qayta ishlash va uzatish tizimlarini o'zlashtirish. Hozirgi vaqtda ishlab chiqarishda axborot texnologiyalarining ulushi 50-60% gacha ko'tarildi. Ba'zi tarmoqlar (aloqa, sug'urta, birjalar) uchun axborot texnologiyalarining ulushi (va asosiy vositalardagi tegishli uskunalar) 75% dan oshadi.

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UZBEK LITERATURE UNDER THE MICROSCOPE OF NEURAL NETWORKS: FROM STYLISTIC ANALYSIS TO THEMATIC MODELING

Abstract: *Recent advancements in artificial intelligence and natural language processing have opened new horizons in the study of literary texts. This article explores the potential application of neural network technologies to the analysis of Uzbek literature, particularly from the perspectives of stylistic analysis and thematic modeling. The use of machine learning algorithms offers a fresh approach to examining the structure, language, emotional tone, and semantic content of works by Uzbek authors. The article discusses specific examples in which neural networks identify stylistic features, recurring motifs, and hidden thematic clusters. The aim of the study is to demonstrate how digital technologies can enhance traditional philological research methods and provide new opportunities for teaching and studying Uzbek literature in higher education institutions.*

Keywords: *Uzbek literature, neural networks, stylistic analysis, thematic modeling, digital philology, artificial intelligence, literary studies, pedagogical education.*

In the context of the rapid advancement of artificial intelligence technologies, the humanities—including literary studies—are faced with the need to rethink traditional approaches to text analysis. Uzbek literature, as a significant part of Central Asia's cultural heritage, has increasingly become a focus within the field of digital philology. The application of neural network models to literary works not only accelerates the analytical process but also reveals textual features that are difficult to capture using classical methods. Particularly relevant is the study of stylistic traits and thematic structures embedded in the works of Uzbek authors from various periods—ranging from 20th-century classics to contemporary writers.

Modern deep learning algorithms, including transformer-based models (such as BERT, GPT, and RoBERTa), possess the capability to recognize complex linguistic dependencies, emotional markers, and lexico-semantic patterns across large text corpora. This creates the foundation for objective and scalable literary analysis, enabling the identification of hidden structures, recurring themes, emotional tones, and stylistic shifts. Within the framework of Uzbek literature, this can assist in systematizing a rich and diverse body of works, proposing new classifications, and uncovering patterns that may have previously escaped scholarly attention.

Moreover, such an approach holds significant pedagogical value: teaching students at pedagogical universities to analyze literary texts using digital tools

fosters critical thinking, interdisciplinary competence, and digital literacy. This is particularly important in light of ongoing educational reforms in Uzbekistan aimed at integrating modern technologies into higher education. Thus, the adoption of neural network methods in literary analysis represents not only a scientific breakthrough but also a valuable educational asset, paving the way for a new paradigm in philological education.

The analysis of Uzbek literature through neural network technologies involves two key directions: stylistic analysis and thematic modeling. Stylistic analysis with the help of artificial intelligence enables the identification of authorial traits, speech patterns, rhythmic structures, and lexical preferences that may have eluded traditional literary scholarship. For example, clustering algorithms can group literary works based on stylistic characteristics such as the density of epithets, frequency of specific syntactic constructions, or the degree of emotional coloring. This is especially relevant for analyzing authors who wrote during transitional periods—such as Erkin Vokhidov, Shukur Kholmirzaev, or Utkir Khoshimov—whose works merge traditional and modernist elements.

Thematic modeling, in turn, refers to the automated identification of dominant themes, motifs, and semantic fields based on the analysis of large volumes of text. Methods such as LDA (Latent Dirichlet Allocation) or BERTopic make it possible to detect recurring topics—such as love, national identity, collectivism, the struggle against internal and external enemies, and social justice—through the statistical distribution of words in texts. Applying these models to Uzbek prose and poetry enables researchers to trace the evolution of literary themes from the Soviet period to the post-Soviet era, as well as to observe differences in thematic preferences depending on region, gender, and age group.

Another area of interest is sentiment analysis, which helps assess the emotional tone of a work. Sentiment analysis models allow for the quantification of the prevalence of positive, neutral, or negative emotions in literary texts. For instance, novels about labor life from the 1970s typically reflect neutral-to-positive sentiments, whereas contemporary prose more often displays irony, sarcasm, and anxiety—mirroring societal change and the reevaluation of values.

Furthermore, neural networks can be used to detect intertextual links—such as allusions, quotations, and stylistic parallels between authors and literary eras. This is especially important in the study of post-Soviet Uzbek literature, which exhibits active borrowing of forms and motifs from world literature, including through translated works. For example, in the writings of Abdulla Oripov, one can trace the influence of Eastern poetics combined with modernist forms from Western traditions.

The application of such methods requires the creation of a digital corpus of Uzbek literature, which, in turn, promotes the digitization of humanities data in Uzbekistan. Currently, such corpora are limited in scope and require significant expansion, standardization, and annotation. Nevertheless, there are already ongoing initiatives to digitize the works of both classical and contemporary Uzbek authors and convert them into machine-readable formats for further analysis.

Thus, neural network technologies not only create opportunities for a more accurate and comprehensive study of Uzbek literature, but also contribute to the development of new teaching methods, the stimulation of student research activity, and the integration of the humanities into the digital educational ecosystem.

The integration of neural network technologies into the analysis of Uzbek literature represents a crucial step toward incorporating digital tools into the humanities. These technologies expand the boundaries of traditional literary scholarship and offer new interpretive methods capable of addressing both microstructural (lexical and syntactic) and macrostructural (thematic, intertextual, and stylistic) levels of analysis. Thanks to the capabilities of machine learning and natural language processing, researchers gain powerful tools for conducting deeper and more objective studies of both classical and contemporary Uzbek literary texts.

The educational potential of these methods is of particular importance. The use of thematic modeling, stylistic classification, and sentiment analysis can form the basis of innovative pedagogical practices in teacher training institutions, where future educators not only learn traditional methods of literary analysis but also acquire skills in working with digital tools and interpreting data using artificial intelligence. This aligns with global educational trends aimed at fostering digital literacy, critical thinking, and interdisciplinary analytical skills among students.

In the context of Uzbekistan, where reforms in the digitalization of education and scientific research are actively underway, such approaches are especially relevant. The creation and development of a digital corpus of Uzbek literature, the integration of neural network platforms into research and teaching practices, as well as interdisciplinary collaboration between philologists, programmers, and educators, have the potential to give a powerful impetus to the advancement of the humanities. In the long term, this will not only improve the quality of academic research but also contribute to the formation of a new culture of scholarly thinking—one that is open to innovation and technological progress.

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EFFECTIVE USE OF ARTIFICIAL INTELLIGENCE OPPORTUNITIES IN THE PUBLIC ADMINISTRATION SYSTEM

Abstract: *This article discusses the development of artificial intelligence and the attention paid to it by Uzbekistan, the reforms being implemented in this area, the content and essence of laws and resolutions on the topic, and the problems and solutions for the further development of the field of artificial intelligence in Uzbekistan.*

Keywords: *Artificial Intelligence, Digital Technologies, MyID, Digital Uzbekistan-2030, Unified Social Protection Register, Unified Identification System, Electronic Government System Database.*

Introduction

In today's conditions of rapid development of science and information and communication technologies, in the developed countries of the world, it is customary to widely use the possibilities of modern information technologies and artificial intelligence in the fields of state and community management, economy, industry, social protection, education, medicine, employment, agriculture, defense, security, tourism and other fields.

Materials and methods

The term " Artificial Intelligence" dates back to 1956 come appearance it happened This year in the summer The USA Dartmouth at the university artificial thinking issues according to conference as It was Claude Shannon (Bell Laboratories) Nathaniel Rochester (IBM), Herbert Simon (Carnegie University , Trenchard Moore (Princeton) University), John McCarthy (Dartmouth University), Marvin Minsky (Harvard University) . scientists participation has done .

The American computer scientist John McCarthy (1927–2011), who spoke at this conference, went down in history as the author of the term "Artificial Intelligence".

Artificial intelligence - a discovery in the 1980s so began to be recognized . Scientists this on the way textbooks work exit They started .

Also, in 1997, the famous chess program “Deep Blue” was created, which defeated the World Chess Champion Garry Kasparov. In those years, a 6th generation computer project based on neural networks was being developed in Japan. After that, attention to artificial intelligence increased. From large companies to military institutions, this field began to be financed. As a result new increasing the number of technologies , competition increased , artificial intelligence tools improved went .

So, what is Uzbekistan doing in this regard? Uzbekistan has also set a priority to become one of the leading countries with innovative development by 2030 through the development of informatization and the digital economy.

Results

The following facts can be cited about the current state of development of artificial intelligence technologies in our country, including the adoption of the Resolution of the President of the Republic of Uzbekistan No. PP-4996 dated February 17, 2021 “On measures to create conditions for the accelerated introduction of artificial intelligence technologies”. In accordance with this resolution, starting from the 2021-2022 academic year, courses and subjects on the practical application of artificial intelligence technologies in economic sectors and the system of public administration have been introduced in 15 higher educational institutions. Starting from the 2023-2024 academic year, 572 students (510 bachelors, 62 masters) were admitted to 12 higher educational institutions to train personnel in the direction of “Artificial Intelligence”; starting from the 2024-2025 academic year, courses and subjects on artificial intelligence technologies have been introduced in 14 higher educational institutions. The El-Yurt Umidi Foundation sent young people who expressed a desire to study in the field of "Artificial Intelligence" to leading foreign higher education institutions. A research institute for the development of digital technologies and artificial intelligence with specialized laboratories was established under the Ministry of Digital Technologies. Within the framework of the activities of the Open Data Portal of the Republic of Uzbekistan, a digital data platform (data.egov.uz) was launched, which provides the opportunity to obtain data and other data sets of state bodies for using software based on artificial intelligence. Within the framework of the decision, pilot projects were implemented on the introduction of artificial intelligence in agriculture, banking, finance, transport, healthcare, pharmaceuticals, energy, taxation and other priority sectors and areas. Also, a research institute for artificial intelligence technologies was established under the Ministry of Digital Technologies. The sole integrator for the development and support of state information systems under the Ministry of Digital Technologies is UZINFOCOM. With the help of this organization, the “Mukhlisa” voice assistant system and “MyID” were developed.

Discussion

of the President of the Republic of Uzbekistan No. PP-358 dated October 14, 2024 “On Approval of the Strategy for the Development of Artificial Intelligence Technologies until 2030” was approved. According to the Resolution, it is necessary to create favorable conditions for the introduction of artificial intelligence technologies in the social sphere and economic sectors, to achieve our country's inclusion among the world's leading countries in the use of artificial intelligence technologies, as well as to implement the “Digital Uzbekistan-2030” it was determined to ensure the implementation of the goals and tasks set in the strategy .

In particular, to increase the volume of software products and services created on the basis of artificial intelligence to 1.5 billion US dollars;

Increase the share of services provided on the basis of artificial intelligence to 10% in the unified interactive public services portal;

increasing the number of scientific laboratories operating in the field of artificial intelligence to 10 and launching high-capacity computing servers;

To achieve the Republic of Uzbekistan's inclusion in the top 50 countries in the Government AI Readiness Index;

formation of the regulatory framework aimed at the development of artificial intelligence technologies, improvement of standards in the field and strengthening of international cooperation relations;

increase the knowledge and skills of the population on the use of artificial intelligence technologies, develop the potential of personnel.

“Single Register of Social Protection”, provided for in the Resolution of the President of the Republic of Uzbekistan “On additional measures to automate the procedures for providing state social services and assistance to the population”, should also effectively use the capabilities of artificial intelligence, along with modern technologies. As is known, now the procedures for considering applications for the assignment of social benefits and their assignment will be carried out through the “single register”. As an integral part of the “e-government” system, the “Single Register of Social Protection” can serve as an interdepartmental integration platform and manage the database provided by the relevant departments using artificial intelligence technology.

It is possible to form an artificial intelligence database from existing data sources in Uzbekistan and use them effectively. Including:

Unified identification system - (id.gov.uz);

Open Data Portal of the Republic of Uzbekistan – (data.gov.uz);

Electronic Government System Database – (my.gov.uz);

Database of State Services Agency – (davkhizmat.uz); including the database of various ministries and agencies.

It is known that the privacy of personal data, their storage and management are important when introducing artificial intelligence into social and other fields. Because the ethical aspects of the use of artificial intelligence are in the focus of attention, especially the US, Great Britain, EU member states and leading international organizations, and the issue of human rights and personal data, as well as the danger of using artificial intelligence for political and destructive purposes, are urgent. In some countries, in particular, China and Russia, there are accusations that artificial intelligence and ICT are being used to limit the personal rights and freedoms of citizens and for political purposes. Therefore, it is appropriate to pay special attention to these issues when creating the legal basis for the use of artificial intelligence.

Conclusions

In conclusion, it can be said that if several problems that currently hinder the development of artificial intelligence in Uzbekistan were eliminated, work in this area would be significantly improved. For example, in the development of artificial intelligence schools, it is necessary to organize laboratories at universities that carry

out practical work, if students do not put the knowledge they have learned into practice, there will be no development in the field. For this, there must be powerful and new computers, HPC (High performance computing), or, more simply, supercomputers, good furniture and, at the same time, electricity, and they must be allocated to the scientific community for free or very cheap use. We believe that universities and institutes themselves should have such artificial intelligence laboratories.

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BOSHLANG‘ICH TA’LIMDA DARSDAN TASHQARI ISHLARNING TARBIYAVIY AHAMIYATI

Anotatsiya: *Ushbu maqola boshlang‘ich ta’limda darsdan tashqari ishlarning tarbiyaviy ahamiyatini keng yoritadi. Darsdan tashqari faoliyatlarning o‘quvchilarning axloqiy, estetik, ijtimoiy va intellektual rivojlanishidagi roli ilmiy asosda tahlil qilinadi. Maqolada ushbu ishlarning bolalarning shaxsiyatini shakllantirish, ijodiy salohiyatini yuzaga chiqarish va fuqarolik ongini rivojlantirishdagi ahamiyati ko‘rib chiqiladi. Shuningdek, o‘qituvchilar, ota-onalar va jamiyatning faol ishtiroki, mavjud muammolar va ularni hal qilish yo‘llari muhokama qilinadi. Tadqiqot darsdan tashqari ishlarning samaradorligini oshirish uchun tizimli yondashuv va global tajribalarni mahalliy sharoitlarga moslashtirish zarurligini ta’kidlaydi.*

Kalit so‘zlar: *Boshlang‘ich ta’lim, darsdan tashqari ishlar, tarbiyaviy ahamiyat, axloqiy tarbiya, estetik rivojlanish, ijtimoiy ko‘nikmalar, ijodiy salohiyat, fuqarolik ongi, o‘qituvchilar, ota-onalar, jamiyat.*

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THE EDUCATIONAL SIGNIFICANCE OF EXTRACURRICULAR ACTIVITIES IN PRIMARY EDUCATION

Abstract: *This article comprehensively explores the educational significance of extracurricular activities in primary education. The role of extracurricular activities in the moral, aesthetic, social, and intellectual development of students is analyzed from a scientific perspective. The article examines their importance in shaping children’s personalities, unlocking their creative potential, and fostering civic consciousness. Additionally, it discusses the active involvement of teachers, parents, and the community, as well as existing challenges and solutions. The study emphasizes the need for a systematic approach and the adaptation of global experiences to local contexts to enhance the effectiveness of extracurricular activities.*

Keywords*:Primary education, extracurricular activities, educational significance, moral education, aesthetic development, social skills, creative potential, civic consciousness, teachers, parents, community.*

Boshlang‘ich ta’lim o‘quvchilarning intellektual, axloqiy, ijtimoiy va emotsional rivojlanishida muhim poydevor bo‘lib xizmat qiladi. Ushbu jarayonda darsdan tashqari ishlar tarbiyaviy va ta’lim jarayonlarining muhim qismi sifatida

alohida ahamiyat kasb etadi. Darsdan tashqari ishlar o‘quvchilarning nafaqat bilim va ko‘nikmalarini oshirishga, balki ularning shaxsiy va ijtimoiy fazilatlarni rivojlantirishga, ijodiy salohiyatini yuzaga chiqarishga va fuqarolik ongini shakllantirishga xizmat qiladi. Ushbu maqola boshlang‘ich ta’limda darsdan tashqari ishlarning tarbiyaviy ahamiyatini kengroq yoritadi, ularning o‘quvchilar shaxsiyatini shakllantirishdagi rolini ilmiy asosda tahlil qiladi, amaliy jihatlarini ko‘rib chiqadi va mavjud muammolar hamda yechimlar haqida mulohaza yuritadi.

Darsdan tashqari ishlar boshlang‘ich ta’limda o‘quv dasturidan tashqari tashkil etiladigan faoliyatlar sifatida ta’riflanadi. Bu faoliyatlar sport musobaqalari, san’at to‘garaklari, adabiy kechalar, ekologik tadbirlar, xayriya aksiyalari, ilmiy loyihalar va boshqa ko‘plab shakllarni o‘z ichiga oladi. Ularning asosiy maqsadi o‘quvchilarning har tomonlama rivojlanishini ta’minlash, ularning qiziqishlari va qobiliyatlarini kashf etish, shuningdek, ijtimoiy va axloqiy qadriyatlarni singdirishdir. Darsdan tashqari ishlarning tarbiyaviy ahamiyati ularning o‘quvchilarning shaxsiy rivojlanishiga ko‘p qirrali ta’sir ko‘rsatishida namoyon bo‘ladi. Bu faoliyatlar o‘quvchilarga o‘zlarini erkin ifoda etish, jamoaviy ish ko‘nikmalarini rivojlantirish va ijodiy fikrlashni o‘rganish imkonini beradi (Anderson & Miller, 2019).

Boshlang‘ich yoshdagi bolalar axloqiy me’yorlar va qadriyatlarni o‘zlashtirish jarayonida bo‘ladilar. Darsdan tashqari ishlar ushbu jarayonda muhim vosita sifatida xizmat qiladi. Masalan, jamoaviy loyihalar, xayriya tadbirlari yoki ekologik aksiyalar o‘quvchilarda mas'uliyat, adolat, halollik va o‘zaro yordam kabi fazilatlarni shakllantiradi. Xususan, xayriya tadbirlari orqali o‘quvchilar ijtimoiy tengsizlik va muhtojlarga yordam berish muhimligini tushunadilar, bu esa ularning empatiya va ijtimoiy mas'uliyat tuyg‘usini oshiradi. Tadqiqotlar shuni ko‘rsatadiki, bunday faoliyatlarda ishtirok etgan bolalar o‘z jamoasiga nisbatan ko‘proq mas'uliyat his qiladilar va fuqarolik ongini erta yoshda shakllantiradilar (Smith & Thompson, 2020). Shu bilan birga, vatanparvarlikka oid tadbirlar, masalan, milliy bayramlarni nishonlash yoki tarixiy joylarga sayohatlar o‘quvchilarda o‘z mamlakati va madaniyatiga hurmat tuyg‘usini uyg‘otadi.

Darsdan tashqari ishlar o‘quvchilarning estetik dunyoqarashini shakllantirishda va emotsional intellektini rivojlantirishda muhim rol o‘ynaydi. Musiqa, tasviriy san’at, teatr yoki adabiyot bilan bog‘liq to‘garaklar bolalarning ijodiy salohiyatini yuzaga chiqaradi va ularning go‘zallikni idrok etish qobiliyatini oshiradi. Masalan, teatr to‘garaklarida ishtirok etish o‘quvchilarga o‘z his-tuyg‘ularini ifodalash, boshqa odamlarning nuqtai nazarini tushunish va sahnada o‘ziga ishonchni rivojlantirish imkonini beradi. Eisner (2002) o‘z tadqiqotlarida san’at bilan shug‘ullanish o‘quvchilarning nafaqat ijodiy fikrlashini, balki muammolarni ijodiy yechish qobiliyatini ham oshirishini ta’kidlaydi. Bundan tashqari, estetik faoliyatlar o‘quvchilarning stressni boshqarish va emotsional barqarorlikni saqlash qobiliyatini rivojlantiradi, bu esa ularning psixologik salomatligiga ijobiy ta’sir ko‘rsatadi.

Sinfdan tashqari faoliyat o‘quvchilarning ijtimoiy ko‘nikmalarini rivojlantirishda muhim platforma hisoblanadi. Sport musobaqalari, jamoaviy

loyihalar yoki debat klublari kabi faoliyatlar bolalarga jamoada ishlash, rahbarlik qilish va o‘zaro munosabatlarni mustahkamlashni o‘rgatadi. Bu jarayon o‘quvchilarda o‘zaro hurmat, hamkorlik va murosaga kelish kabi ijtimoiy fazilatlarni shakllantiradi. Masalan, sport musobaqalarida ishtirok etish o‘quvchilarga nafaqat jismoniy faollikni, balki jamoaviy ruh, adolatli raqobat va mag‘lubiyatni munosib qabul qilishni ham o‘rgatadi. Tadqiqotlar shuni ko‘rsatadiki, darsdan tashqari faoliyatlarda faol ishtirok etgan o‘quvchilar tengdoshlari bilan yaxshi munosabatlar o‘rnatishda va ijtimoiy muhitga moslashishda muvaffaqiyatliroq bo‘ladilar .

Bo’sh vaqtlarda o‘quvchilarning ilmiy va ijodiy qobiliyatlarini rivojlantirishda ham muhim hissa qo‘shadi. Ilmiy to‘garaklar, robototexnika klublari yoki ekologik loyihalar o‘quvchilarga o‘z qiziqishlarini kashf etish va muammolarni ilmiy yondashuv orqali hal qilish imkonini beradi. Masalan, ekologik tadbirlar orqali o‘quvchilar atrof-muhit muhofazasi muhimligini tushunadilar va barqaror rivojlanish g‘oyalarini o‘zlashtiradilar. Bunday faoliyatlar o‘quvchilarning tanqidiy fikrlash, tahlil qilish va innovatsion yechimlar topish qobiliyatlarini rivojlantiradi. Shu bilan birga, ijodiy loyihalar, masalan, hikoya yozish yoki multimedia loyihalari o‘quvchilarning tasavvurini va o‘ziga xoslikni rivojlantirishga yordam beradi.

Tarbiyaviy ahamiyatini to‘liq ro‘yobga chiqarishda o‘qituvchilar, ota-onalar va mahalliy jamoaning faol ishtiroki muhim ahamiyatga ega. O‘qituvchilar ushbu faoliyatlarni tashkil qilishda o‘quvchilarning yosh xususiyatlari, qiziqishlari va ehtiyojlarini hisobga olishlari zarur. Pedagoglarning zamonaviy usullar va texnologiyalardan foydalanishi, shuningdek, o‘quvchilarning faol ishtirokini rag‘batlantirishi tadbirlarning samaradorligini oshiradi. Ota-onalar esa bolalarining darsdan tashqari faoliyatlarda ishtirok etishini qo‘llab-quvvatlash orqali tarbiyaviy jarayonga hissa qo‘shadi. Masalan, ota-onalarning tadbirlarda ishtirok etishi yoki ularni moddiy jihatdan qo‘llab-quvvatlashi bolalarning motivatsiyasini oshiradi. Mahalliy jamoa va nodavlat tashkilotlarning qo‘llab-quvvatlashi esa darsdan tashqari ishlarning kengroq miqyosda tashkil etilishiga yordam beradi.

Salohiyatidan to‘liq foydalanishda bir qator muammolar mavjud. Birinchidan, moddiy-texnik resurslarning yetishmasligi, xususan, qishloq maktablarida sport zallari, san’at studiyalari yoki ilmiy laboratoriyalarning yo‘qligi faoliyatlarning tashkil etilishini qiyinlashtiradi. Ikkinchidan, o‘qituvchilarning malakasini oshirishga yetarlicha e’tibor berilmasligi tufayli ba’zi pedagoglar zamonaviy usullarni qo‘llashda qiynaladi. Uchinchidan, o‘quvchilarning haddan tashqari bandligi yoki ota-onalarning faoliyatga qiziqishining pastligi ishtirok darajasini pasaytiradi. Ushbu muammolarni hal qilish uchun quyidagi choralar ko‘rilishi mumkin:

Davlat siyosati: Darsdan tashqari ishlar uchun maxsus grantlar ajratish va maktab infratuzilmasini yaxshilash.

O‘qituvchilar malakasini oshirish: Pedagoglar uchun zamonaviy pedagogik usullar va texnologiyalar bo‘yicha doimiy treninglar tashkil qilish.

Ota-onalarni jalb qilish: Ularning faol ishtirokini rag‘batlantirish uchun ma’lumot kampaniyalari va oilaviy tadbirlar tashkil etish.

Hamkorlik: Nodavlat tashkilotlar, mahalliy biznes va jamoat tashkilotlari bilan hamkorlikni kengaytirish.

Xulosa qilib aytganda boshlang‘ich ta’limda darsdan tashqari ishlar o‘quvchilarning har tomonlama rivojlanishi uchun muhim vosita hisoblanadi. Ular axloqiy, estetik, ijtimoiy va intellektual tarbiyani ta’minlash orqali bolalarning shaxsiyatini shakllantiradi, ularning ijodiy salohiyatini yuzaga chiqaradi va fuqarolik ongini rivojlantiradi. Ushbu faoliyatlarning samaradorligini oshirish uchun tizimli yondashuv, ya’ni davlat, ta’lim muassasalari, o‘qituvchilar, ota-onalar va jamiyatning birgalikdagi sa’y-harakatlari talab etiladi. Faqat shu holatda darsdan tashqari ishlar o‘quvchilarning shaxsiy va ijtimoiy rivojlanishiga xizmat qiluvchi samarali platformaga aylanadi. Kelajakda ushbu faoliyatlarni yanada rivojlantirish uchun ilmiy tadqiqotlar va amaliy loyihalarni ko‘paytirish, shuningdek, global tajribalarni mahalliy sharoitlarga moslashtirish muhim hisoblanadi.

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OG'IR ATLETIKADA SILTAB KO'TARISH: TEXNIKA, TAHLIL, VA RAQOBATDAGI AHAMIYATI

Annotatsiya: *Og'ir atletikada siltab ko'tarish harakati sportchidan yuqori darajadagi jismoniy kuch, mukammal texnika va psixologik barqarorlikni talab qiladi. Ushbu maqolada siltab ko'tarishning texnikasi, uning fiziologik va psixologik asoslari, biomekanik tahlili, mashg'ulot strategiyalari va musobaqadagi ahamiyati batafsil ko'rib chiqiladi. Siltab ko'tarishning ikki bosqichi — rixlash (clean) va silkib ko'tarish (jerk) har biri o'ziga xos texnikaga ega bo'lib, ularni mukammal bajarish sportchining umumiy natijalariga katta ta'sir ko'rsatadi. Maqola siltab ko'tarishni o'rganish va takomillashtirish uchun zarur bo'lgan yondashuvlarni hamda mashg'ulotlar strategiyasini tahlil qiladi. Ushbu harakatning fizik va psixologik jihatlari sportchining yuqori natijalarga erishishidagi muhim omil ekanligi ta'kidlanadi.*

Kalit so'zlar: *Og'ir atletika, siltab ko'tarish, rixlash (clean), silkib ko'tarish (jerk), biomekanika, mushak guruhlari, texnika, psixologik tayyorgarlik, mashg'ulot strategiyalari, musobaqa, jismoniy tayyorgarlik.*

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WEIGHTLIFTING: TECHNIQUE, ANALYSIS, AND ITS SIGNIFICANCE IN COMPETITION

Annotation: *The clean and jerk movement in weightlifting requires the athlete to possess high levels of physical strength, perfect technique, and psychological stability. This article thoroughly discusses the technique of the clean and jerk, its physiological and psychological foundations, biomechanical analysis, training strategies, and its significance in competitions. The clean and jerk consists of two phases — the clean and the jerk — each of which requires specific techniques. Successfully mastering these techniques significantly impacts the athlete's overall performance. The article also explores the necessary approaches for learning and improving the clean and jerk, as well as training strategies. It emphasizes the importance of both the physical and psychological aspects in achieving high results in this discipline.*

Keywords: *Weightlifting, clean and jerk, clean, jerk, biomechanics, muscle groups, technique, psychological preparation, training strategies, competition, physical preparation.*

Og‘ir atletika — bu kuch, chaqqonlik, muvozanat va texnikani uyg‘unlashtirgan sport turi bo‘lib, u ikki asosiy harakatni o‘z ichiga oladi: rixlab ko‘tarish (snatch) va siltab ko‘tarish (clean and jerk). Bu maqolada aynan siltab ko‘tarishning texnikasi, afzalliklari, musobaqadagi ahamiyati va mashq qilish usullari haqida batafsil so‘z yuritiladi.

Siltab ko‘tarish, og‘ir atletikaning ikkinchi asosiy harakati bo‘lib, sportchilarga og‘irliklarni maksimal darajada ko‘tarish imkonini beradi. U qadim zamonlardan boshlab, turli jismoniy kuch sinovlarida qatnashgan, ammo bugungi kunda ilmiy yondashuvlar asosida aniq belgilangan texnikalarga ega bo‘ldi. Avvaliga, sportchilar shtangani yelkasiga olib kelish uchun oddiy kuch ishlatishgan, ammo zamonaviy og‘ir atletika aniq texnikalar va usullarni joriy qilgan. Bunda ko‘plab ilmiy tadqiqotlar va tajribalar yordamida texnika takomillashtirilgan.

Siltab Ko‘tarish Nima?

Siltab ko‘tarish — bu og‘ir atletikaning ikki bosqichli harakati bo‘lib, u sportchidan katta jismoniy kuch va mukammal texnika talab qiladi. Ushbu harakatda sportchi shtangani yerdan o‘zgacha texnika yordamida yelkasigacha olib chiqadi (bu bosqich rixlash deb ataladi), keyin esa shtangani yuqoriga, bosh ustiga ko‘taradi (bu bosqich silkib ko‘tarish deb ataladi).

Siltab ko‘tarishning texnik bosqichlari

1. Start pozitsiyasi (Boshlang‘ich holat)

Sportchi oyoqlarini yelka kengligida joylashtiradi va belini tekis tutadi. Tizzalar engil bukilgan bo‘lib, qo‘llar shtangada to‘g‘ri va teng masofada ushlanadi. Ko‘zlar oldinga qaraydi va tananing barcha qismlari kuchli va tayyor holatda bo‘ladi.

2. Rixlash (Clean)
   - Birinchi tortish: Shtanga yerdan yuqoriga, tanaga yaqin bo‘lib ko‘tariladi. Bu bosqichda sportchi oyoq va son mushaklaridan foydalanadi.
   - Ikkinchi tortish: Shtanga tizzalardan o‘tgach, sportchi sonlarini kuchli ishlatib, shtangani yuqoriga chiqaradi va pastga tushishga tayyorlanadi.
   - Qabul qilish (Catch): Shtanga yelka ustiga olib kelinadi va sportchi "front squat" pozitsiyasiga tushadi.
   - Tik turish: Sportchi yelkasida shtangani barqaror tutib, tik holatga qaytadi.
3. Silkib Ko‘tarish (Jerk)
   - Tayyorgarlik: Sportchi nafas olib, kuchni to‘plagan holda tizzalarni engil bukadi.
   - Dip (pastga bukilish): Tizzalar bukilib, shtanga tanaga yaqin bo‘ladi.

- Drive (tepish): Sportchi yuqoriga turtish bilan shtangani bosh ustiga chiqaradi.
- Split pozitsiya: Sportchi oyoqlaridan birini oldinga, birini orqaga olib, shtangani barqaror ushlaydi.
- Recovery: Oyoqlar bir chiziqqa keltiriladi, shtanga bosh ustiga to‘liq barqaror turadi.

Siltab ko‘tarishda biomekanik tahlil

Siltab ko‘tarish biomekanik jihatdan juda murakkab harakatdir. Ushbu harakatda kuchli impuls yaratish uchun oyoqlar va son mushaklaridan kuchli foydalanish zarur. Bar markazining trayektoriyasi o‘ta muhimdir: shtanga imkon qadar tana markaziga yaqin bo‘lishi kerak, aks holda og‘irlikni nazorat qilish qiyinlashadi. Yagona kuchli zanjir sifatida oyoqdan yelkagacha bo‘lgan barcha mushaklar o‘zaro uyg‘un ishlashiga e’tibor qaratish zarur.

Siltab ko‘tarishning eng qiyin jihatlaridan biri — bu tezlik va kuchning uyg‘unligidir. Agar sportchi shu vaqtgacha kuchini optimal darajada yo‘naltira olmasa, shtanganing yuqoriga ko‘tarilishi qiyin bo‘ladi. Ikkinchi tortish bosqichida sportchi son mushaklari orqali tezlik yaratib, shtangani tezda yuqoriga "otishi" kerak. Biroq, bu tezlik sportchining kuchi bilan to‘g‘ri bog‘lanishi kerak, chunki kuch va tezlikning uyg‘un ishlashiga qarab, natijalar yaxshilanadi.

Mashg‘ulot Strategiyalari

Siltab ko‘tarishni mukammal o‘rganish uchun to‘g‘ri mashqlar rejasiga ega bo‘lish kerak.

- Boshlovchilar uchun: Yangi boshlovchilar uchun mashg‘ulotlar shtanga bo‘lmagan hollarda, masalan, tayoq bilan texnika ustida ishlashni o‘z ichiga oladi. Shuningdek, harakatni qismlarga ajratib mashq qilish ham foydali bo‘ladi.
- O‘rta darajadagi sportchilar uchun: Bunday sportchilar uchun maxsus mashqlar va ko‘proq og‘irlik bilan ishlash tavsiya etiladi.
- Professional sportchilar uchun: Sportchilar maksimal og‘irliklar bilan ishlashadi va texnikani yuqori darajada takomillashtiradilar. Shuningdek, mashqlarni individual tarzda va biomekanik tahlil asosida bajarish lozim.

Musobaqadagi ahamiyati

Siltab ko‘tarish musobaqalarda sportchining yakuniy natijasi uchun juda muhimdir. Ushbu harakatda sportchi o‘zining maksimal og‘irligini ko‘taradi. Musobaqada sportchining natijasi rixlab ko‘tarish va siltab ko‘tarishning eng yaxshi urinishlarining yig‘indisi bilan hisoblanadi. Shuning uchun siltab ko‘tarish harakati sportchining g‘olib bo‘lishi yoki yutqazishiga bevosita ta’sir qiladi.

Xulosa

Siltab ko‘tarish — og‘ir atletikada sportchidan maksimal kuch va mukammal texnikani talab qiladigan murakkab harakatdir. Bu nafaqat sportchining kuchini, balki uning chaqqonligini, muvozanatini va harakatni nazorat qilish qobiliyatini sinovdan o‘tkazadi. Siltab ko‘tarishdagi muvaffaqiyat sportchining umumiy natijalariga katta ta’sir qiladi, shuning uchun har bir sportchi bu harakatni

mukammal o‘rganishga, texnikasini takomillashtirishga va jismoniy tayyorgarligini yuqori darajada saqlashga intilishi kerak.

Ushbu maqolada ko‘rib chiqilgan texnik bosqichlar, mashq usullari va musobaqadagi o‘rni siltab ko‘tarishni muvaffaqiyatli o‘rganish va amaliyotda qo‘llash uchun zarur bo‘lgan barcha ma’lumotlarni taqdim etadi.

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TYPES OF TRANSFORMER POWER LOSSES AND WAYS TO REDUCE THEM

Annotation.*This article explores the different types of power losses in transformers and methods to minimize them. It provides a detailed explanation of nominal power, power factor, and the influence of load variations on transformer efficiency. The paper discusses core (steel) losses, copper (winding) losses, and the impact of idle operation. Practical ways to reduce losses—such as using high-quality electrical steel and optimizing winding design—are also reviewed. Additionally, the article outlines transformer design considerations aimed at achieving high efficiency under typical operating conditions.*

Keywords.*Transformer, power losses, efficiency, copper losses, core losses, load factor, no-load current, electromagnetic conversion, energy efficiency*

Introduction

Nominal power. The nominal power of a transformer is the power that it can deliver for a long time without overheating above the permissible temperature. The normal operating life of a power transformer should be at least 20 years. Since the heating of the windings depends on the magnitude of the current flowing through them, the transformer passport always indicates the total power Snom in volt-amperes or kilovolt-amperes.

Depending on the power factor $\cos\varphi_2$ at which the consumers operate, more or less useful power can be obtained from the transformer. With $\cos\varphi_2$=l, the power of the consumers connected to it can be equal to the nominal power Snom.

When $\cos\varphi_2$<1 the power of the consumers should not exceed the value.

$$\frac{S_{nom}}{cos\varphi_2}$$

Power factor. The power factor cosφ of a transformer is determined by the nature of the load connected to its secondary circuit. When the load decreases, the inductive resistance of the transformer windings begins to have a strong effect and its power factor decreases. In the absence of load (idle state), the transformer has a very low power factor, which degrades the performance of alternating current sources and electrical networks. In this case, the transformer must be disconnected from the AC network.

η%

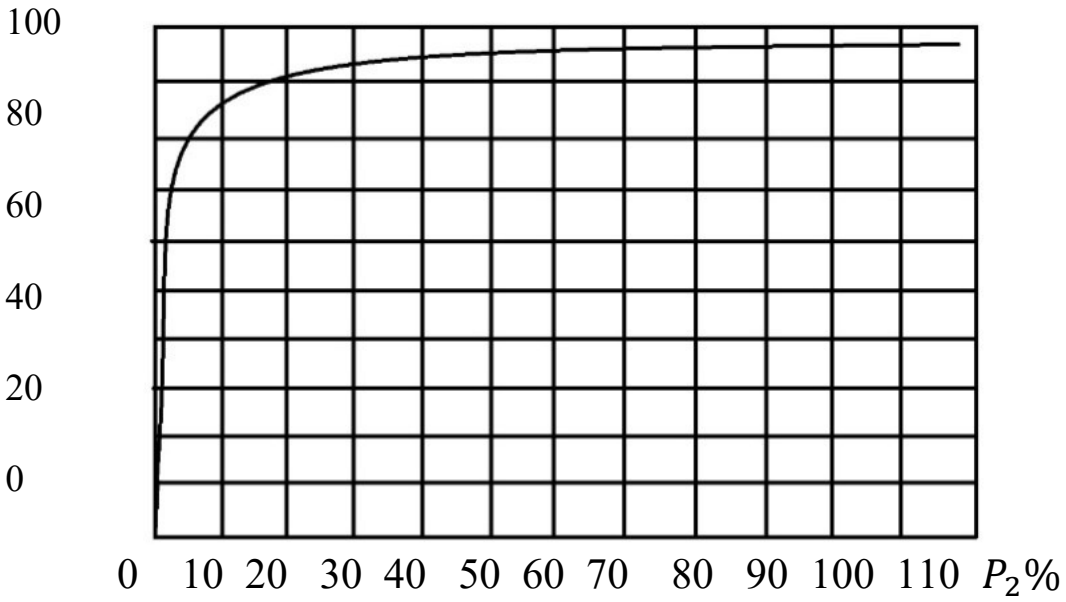

Figure 1. Dependence of transformer efficiency on load.

When idle, the transformer does not transmit electrical energy to the consumer. The power consumed by it is mainly spent on compensating for power losses due to currents in the magnetic circuit and hysteresis. The smaller the cross-section of the magnetic circuit, the greater the induction in it and, as a result, the lower the idle speed. They also increase significantly with an increase in the voltage applied to the primary winding above the nominal value. During operation of powerful transformers, no-load losses are 0.3-0.5% of its nominal power. However, they try to reduce them as much as possible. This is explained by the fact that steel losses do not depend on the transformer being idle or under load. Since the total operating time of a transformer is usually very long, the total annual energy loss during downtime is an important value.

Electrical losses in the winding wires under load, no-load losses

$$\Delta P_{\text{ез}} = \Delta P_{\text{ел1}} + \Delta P_{\text{ел2}}$$

These losses at the rated current are equal to the power consumed by the transformer during a short circuit when the voltage Uк is applied to its primary winding. For high-power transformers, they are usually 0.5-2% of the rated power. To reduce total losses, the correct selection of the wire cross-section of the transformer windings (reducing electrical losses in the wires), the use of electrical steel for the manufacture of the magnetic circuit (reducing losses from magnetization reversal), and the division of the magnetic circuit into a number of sheets separated from each other (reducing losses from eddy currents).

Transformer efficiency equation:

$$\eta = \frac{P_2}{P_1} = \frac{P_2}{P_2 + P_{эл} + P_{ст}}$$

The efficiency of the transformer is relatively high and reaches 98-99% in high-power transformers. In low-power transformers, the efficiency can decrease to 50-70%. When the load changes, the efficiency of the transformer changes, since the useful power and electrical losses change. However, it remains significant over a fairly wide range of load changes (Fig. 2.1). With a large load, the efficiency decreases, since the useful power decreases, and the losses in the steel remain unchanged. A decrease in efficiency is also caused by overloads, since electrical losses increase sharply (they are proportional to the square of the load current, and the useful power is equal to the current only in the first order). The maximum value of the efficiency is at such a load, when the electrical losses are equal to the losses in the steel.

When designing transformers, they strive to achieve maximum efficiency at a load of 50-75% of the nominal; this corresponds to the most likely average load of the operating transformer. Such a load is called economic.

The proposed material discusses the principles and some subtleties of the process of converting electrical energy, how to avoid some mistakes when designing transformers, and also why the transformation ratio is not always a constant value.

Transformer - a static (without rotating parts) electromagnetic device that converts electrical energy of an alternating current with one voltage (current) value into electrical energy of another voltage (current) value at the same frequency. The simplest transformer consists of a core made of electrical steel, on which two windings I and II are installed (Fig. 2.2). The windings that, when connected to a network with a certain voltage, receive alternating current from it, for example, winding I, are called primary, and the other winding that supplies alternating current to another network or load, for example, winding II, are called secondary.

When an alternating current of a certain frequency is passed through the primary winding, the magnetic flux arising in the magnetic circuit crosses the turns of the secondary winding, inducing an electromotive force (EMF) in it, which, when the winding is short-circuited to any circuit, the appearance of an alternating current of the same frequency in the load .Since the magnetic flux in its change simultaneously crosses the turns of the energized primary winding, an electromotive force is induced in it, which coincides in phase with the electromotive force induced in the secondary winding.

No-load current. When the secondary winding is open (the secondary circuit is disconnected), the current in the primary winding is minimal and the winding can be considered as a simple induction coil with a ferromagnetic core. In this case, the electromotive force in the primary winding, or the so-called primary electromotive force [1], is:

$$E_1 = 4{,}44 * F_m * f * W_1 * 10^{-8}$$

The current flowing in the primary winding with the secondary circuit open is very small, and the voltage loss generated in this winding is also very small, so we can assume that the primary electromotive force is almost equal and opposite to the voltage U1, i.e. E1 = U1 and therefore:

$$U_1=4{,}44*F_m*f*W_1*10^{-8}$$ [2].

Here, it is immediately necessary to clarify that the current in the winding connected to an external source of alternating voltage, with the terminals of the secondary winding open, will be small only if the condition is met:

$$U * Z = \{A / B_m * Q_c \} * U$$

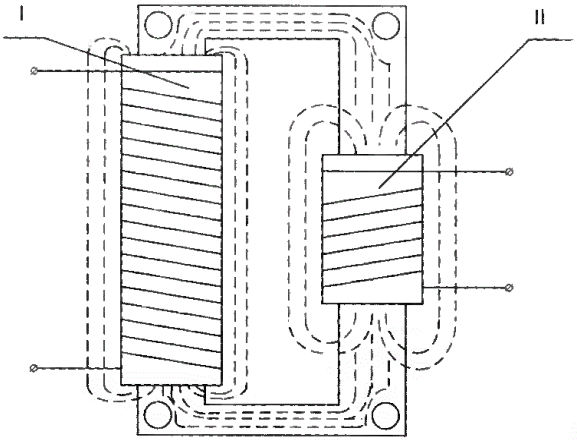

Figure 2 The simplest transformer diagram

where A is some empirical number, the value of which can be from 40 to 60 (most often, the value of 50 is used in calculations). This number depends on the grade of transformer steel (E41-E43 - isotropic hot-rolled, E310-E330 - textured cold-rolled, E340-E360 - textured cold-rolled with reduced conductivity, etc.), the shape of the core (Sh, ShL) , P, PL, O, etc.), the manufacturing technology and the quality of the core assembly. The correctness of this statement can be easily demonstrated, for example, by disassembling a core assembled from W-shaped plates and then "forgetting" some of the plates during assembly. The "no-load" current of such a transformer at a constant voltage applied to the primary winding increases significantly.

For the secondary electromotive force, i.e. the electromotive force induced in the secondary winding, consisting of W2 turns and intersected by the same magnetic flux Fm, one can consider:

$$E_2 = 4{,}44 * \Phi_м * f * W_2 * 10^{-8}$$

And since E2=U2 and formulas (2) and (2a) differ only in the number of turns W1 and W2, the transformation ratio is considered equal to the ratio of the turns of the primary and secondary windings:

K = W1. /W2.

The value of the maximum magnetic flux in the "idle" state of the transformer is equal to:

$$Fм = (E * 108) /(4{,}44 * f * W1)$$

When the transformer is loaded, that is, connect some resistance to its secondary winding, then the current strength in the primary winding increases, the voltage loss in it also increases, therefore, with a constant primary voltage at the terminals, the primary electromotive force E and, consequently, the magnitude of the magnetic flux Fm should decrease.When the transformer is loaded, since the secondary current causes the demagnetization effect mentioned above, it can be

assumed that when the load is connected, a power flow enters the primary circuit, which approximately restores the magnetic flux [1].When the transformer is operating with a load, the entire power consumed by the primary winding P1 is spent on the useful power P2 in the secondary circuit and on losses consisting of losses in the transformer itself (iron). In the magnetic circuit and in the copper windings. Hence, the efficiency:

$$\eta = P2 / P1$$

As noted above, the maximum magnetic flux entering the transformer windings practically does not change when the load changes, therefore, the losses in the transformer core can be considered constant and the same for both "no-load" and operating transformers. load.

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APPLICATION OF VIRTUAL REALITY TECHNOLOGIES IN MEDICAL EDUCATION OPPORTUNITIES AND PROSPECTS

Annotation*:The integration of virtual reality (VR) technologies into medical education has opened new frontiers in enhancing the quality and effectiveness of student training. This paper explores the opportunities and future prospects of using VR tools in the teaching and learning processes within medical institutions. VR simulations enable students to gain hands-on experience in a risk-free environment, improving their understanding of anatomy, clinical procedures, and decision-making skills. The study highlights current applications of VR in anatomy visualization, surgical training, and patient interaction simulations. Additionally, the paper discusses the advantages of VR over traditional teaching methods, such as increased engagement, interactivity, and accessibility. Challenges related to cost, technical limitations, and curriculum integration are also addressed. The findings suggest that, with proper implementation, VR can significantly contribute to the development of competent and confident medical professionals, indicating a promising future for immersive technologies in medical education.*

Keywords: *Virtual reality, medical education, simulation, anatomy training, surgical training, immersive learning, medical students, digital technology in medicine, interactive learning, medical simulation.*

Introduction

The rapid advancement of digital technologies has significantly transformed the landscape of medical education in recent years. Among these innovations, virtual reality (VR) stands out as a powerful tool with the potential to revolutionize traditional teaching and learning methods. VR creates immersive, interactive environments that allow medical students to experience realistic clinical scenarios, explore human anatomy in 3D, and practice surgical procedures in a risk-free setting.

Traditional medical education often relies on textbooks, lectures, cadaver dissections, and limited real-life practice. While these methods remain valuable, they present challenges such as limited access to resources, ethical concerns, and variability in clinical exposure. VR technology addresses many of these limitations by providing standardized, repeatable, and engaging learning experiences that can be tailored to individual student needs.

This paper aims to explore the current applications of VR in medical education, examine its benefits and limitations, and discuss future prospects for its

broader implementation. By analyzing recent studies and practical examples, we seek to highlight the transformative potential of VR in preparing the next generation of healthcare professionals.

Materials and Methods

This study employs a qualitative research approach to analyze the role and effectiveness of virtual reality (VR) technologies in medical education. A systematic review of academic literature, case studies, and institutional reports was conducted to gather comprehensive data on the use of VR in various medical training environments. The sources were selected from scientific databases such as PubMed, ScienceDirect, and Google Scholar, focusing on studies published between 2015 and 2024.

In addition to literature analysis, semi-structured interviews were conducted with medical educators and students from three medical universities that have incorporated VR technologies into their curricula. The interviews aimed to assess user experiences, perceived advantages, limitations, and practical challenges associated with VR-based learning tools.

Furthermore, observational data were collected from recorded VR-based training sessions in clinical skills laboratories, particularly in anatomy instruction and surgical simulation. These observations helped evaluate the level of student engagement, knowledge retention, and skill development.

The collected data were analyzed thematically to identify common trends, technological impacts, and areas for improvement. Ethical approval was obtained from participating institutions, and all participants provided informed consent.

Results and Discussion

The findings of this study reveal that virtual reality (VR) technologies are increasingly being adopted in medical education, particularly in anatomy instruction, surgical training, and clinical scenario simulations. Literature analysis showed that VR-based learning environments significantly enhance student engagement and motivation compared to traditional methods. Students reported better spatial understanding of anatomical structures when using 3D VR models, leading to improved retention and comprehension.

Interview data highlighted that both educators and students view VR as a valuable complement to conventional teaching. Medical instructors noted that VR allowed for more flexible and repeatable practice, especially in procedural skills training. Students appreciated the interactive and immersive aspects of VR, which helped reduce anxiety and build confidence before real-life clinical exposure.

Observational data from VR training sessions confirmed that learners demonstrated a high level of focus and participation. In surgical simulations, students were able to practice techniques multiple times, receive immediate feedback, and correct errors without patient risk—leading to better preparedness and skill development.

However, the study also identified several challenges. High implementation costs, technical issues such as motion sickness and equipment maintenance, and a lack of trained staff to operate VR systems were cited as barriers to widespread

adoption. Additionally, some educators expressed concerns about the lack of standardization in VR content and its integration into formal assessment methods.

Despite these limitations, the overall discussion suggests that VR holds significant potential to transform medical education. With continuous technological improvements and increased accessibility, VR can become a core component of modern medical training, fostering more competent and confident healthcare professionals.

Conclusion

The integration of virtual reality (VR) technologies into medical education presents a transformative opportunity to enhance the effectiveness, accessibility, and engagement of learning experiences. This study has shown that VR can significantly improve students' understanding of complex anatomical structures, develop clinical and procedural skills, and increase their confidence through immersive simulations.

While challenges such as high costs, technical limitations, and curriculum integration remain, the potential benefits of VR clearly outweigh the barriers. With continued technological development and institutional investment, VR has the capacity to become an essential component of medical education in the near future.

Ultimately, the adoption of VR in medical training not only prepares students more effectively for clinical practice but also supports the broader goal of improving healthcare outcomes through more skilled and confident professionals. Further research and collaboration between educators, developers, and healthcare institutions are needed to maximize the impact of VR in the medical field.

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PRINCIPLES AND TECHNOLOGICAL ASPECTS OF FORMING PROFESSIONAL THINKING IN STUDENTS OF MEDICAL PEDAGOGY THROUGH PEDAGOGICAL COMMUNICATION

Annotation*:This article explores the principles and technological aspects involved in the formation of professional thinking in students of medical pedagogy through pedagogical communication. The study highlights the role of interactive communication, digital tools, and modern educational technologies in shaping critical thinking, clinical reasoning, and professional identity among future medical educators. Emphasis is placed on the integration of pedagogical strategies with ICT (Information and Communication Technologies) to foster reflective learning and professional development. The research also outlines innovative approaches and practical recommendations for enhancing communication-based instruction in medical pedagogy, aiming to improve both teaching effectiveness and student engagement.*

Keywords:*medical pedagogy, professional thinking, pedagogical communication, digital technologies, interactive learning, ICT in education, professional development, reflective learning, clinical reasoning, educational innovation*

Introduction

In the rapidly evolving field of medical education, the development of professional thinking in future healthcare professionals has become a key objective. Medical pedagogy, which integrates the principles of teaching with the specific demands of clinical practice, requires not only subject knowledge but also a well-formed professional mindset. One of the most effective ways to cultivate this mindset is through pedagogical communication — a dynamic and interactive process that facilitates the exchange of ideas, critical reflection, and the construction of professional identity.

With the advancement of digital technologies and the widespread adoption of information and communication technologies (ICT) in education, new opportunities have emerged to enhance pedagogical communication and support the development of professional thinking among students. These technologies offer innovative tools for engaging learners, promoting reflective practices, and simulating real-world scenarios that require clinical reasoning and ethical decision-making.

This paper examines the foundational principles and technological approaches that contribute to forming professional thinking in students of medical pedagogy. It explores how digital tools can be integrated into communication-based teaching strategies to foster analytical, ethical, and empathetic competencies essential for medical professionals. The study also aims to identify best practices

and provide recommendations for effectively implementing these technologies in the context of medical pedagogy.

Materials and Methods

This study employed a qualitative and practice-oriented research approach to examine the principles and technological aspects of forming professional thinking in students of medical pedagogy through pedagogical communication. The research was conducted at a medical university, where a group of undergraduate students specializing in medical pedagogy participated in the study during the 2024–2025 academic year.

Participants

A total of 60 second- and third-year medical pedagogy students were involved in the research. The participants were selected through purposive sampling to ensure representation of students with varying levels of academic performance and digital competency.

Data Collection

Data were collected using the following tools:

Surveys and questionnaires to assess students' perceptions of professional thinking and their engagement with pedagogical communication methods.

Classroom observations to evaluate the use of ICT-based communication tools (e.g., learning management systems, video conferencing platforms, simulation software).

Semi-structured interviews with instructors to gain insights into the implementation of digital communication methods in teaching.

Intervention

An experimental module integrating pedagogical communication techniques and digital technologies was designed and implemented over a 6-week period. This module included:

Interactive lectures using digital whiteboards and collaborative platforms;

Simulation-based discussions to enhance clinical reasoning;

Peer-to-peer teaching activities supported by video feedback;

Reflection sessions facilitated through online forums and digital journals.

Data Analysis

Qualitative data were analyzed using thematic content analysis to identify recurring patterns and categories related to students’ development of professional thinking. Quantitative survey data were analyzed using descriptive statistics to measure student engagement, satisfaction, and perceived skill development.

Results and Discussion

The results of the study indicate that the integration of pedagogical communication with digital technologies significantly contributes to the development of professional thinking among students of medical pedagogy. Students demonstrated enhanced engagement, improved critical thinking, and better collaboration skills after participating in the experimental module.

Key Findings

Increased Reflective Thinking

Students reported a higher level of self-awareness and reflection on their learning process. The use of digital journals and forum discussions encouraged them to articulate their thoughts more clearly and critically assess their own professional development.

Enhanced Communication Skills

Interactive sessions using video conferencing and peer-feedback tools improved students' verbal and non-verbal communication. They learned to express medical concepts more effectively and with greater confidence, both in academic and simulated clinical settings.

Improved Clinical Reasoning and Decision-Making

Simulation-based discussions, which replicated real-world clinical scenarios, helped students to practice problem-solving and ethical decision-making in a safe and controlled environment. This promoted deeper understanding of medical responsibilities and teamwork.

Positive Instructor Feedback

Instructors noted that students became more active and independent learners. The use of ICT tools allowed for more personalized feedback, better monitoring of progress, and more dynamic classroom interactions.

Discussion

The findings align with existing literature emphasizing the importance of communication in the development of professional identity in medical education. Pedagogical communication—when combined with technology—creates a multidimensional learning environment that supports student-centered education. Moreover, ICT tools foster autonomy, collaboration, and continuous feedback, which are essential for forming professional competencies.

However, the study also highlighted some challenges. Not all students were equally comfortable with digital tools at the start of the program. This suggests a need for preliminary training in digital literacy before implementing such modules on a larger scale.

Overall, the integration of pedagogical communication and digital technologies proves to be a powerful strategy for shaping professional thinking in medical pedagogy. It enhances both the content and the delivery of medical education, making learning more interactive, reflective, and aligned with the demands of modern healthcare education.

Conclusion

The study confirms that the strategic integration of pedagogical communication and digital technologies plays a vital role in forming professional thinking among students of medical pedagogy. By creating interactive, reflective, and student-centered learning environments, educators can significantly enhance students' ability to think critically, communicate effectively, and make informed professional decisions.

The use of ICT tools not only enriches the teaching process but also supports the development of essential professional competencies such as clinical reasoning, ethical awareness, and collaborative practice. Furthermore, the study highlights the importance of instructor readiness and student digital literacy as key factors for successful implementation.

To maximize the impact of such approaches, it is recommended that medical universities invest in digital infrastructure, provide targeted training for both students and faculty, and incorporate communication-focused modules into the curriculum. These steps will help foster a new generation of medical educators equipped with the professional mindset and technological skills necessary for modern healthcare education.

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SPECIFIC FEATURES OF CONGENITAL HEART DEFECTS IN CHILDREN BORN WITH HYDROCEPHALY

Abstract: *This scientific work is dedicated to the analysis of the clinical features and developmental course of congenital heart defects in children born with hydrocephalus. The combination of two serious congenital conditions-hydrocephalus and structural heart anomalies-creates a unique clinical scenario that presents numerous challenges in early diagnosis, management, and long-term care. The study investigates how these conditions interact pathophysiologically, influencing each other's severity and outcomes. It also explores potential embryological links that may explain the simultaneous occurrence of brain and heart malformations. Particular attention is given to diagnostic methods, multidisciplinary treatment strategies, and prognostic factors affecting survival and neurodevelopment. This research highlights the importance of early screening, integrated care, and comprehensive follow-up for affected children, aiming to improve both quality of life and clinical outcomes. The paper serves as a resource for pediatric specialists seeking a deeper understanding of how hydrocephalus alters the clinical course of congenital heart disease and vice versa.*

Keywords*: Hydrocephalus, Congenital Heart Defects, Embryological Connection, Neurodevelopmental Outcomes, Multidisciplinary Treatment Strategies, Pathophysiology, Early Screening, Prognostic Factors, Integrated Care.*

Introduction

Congenital diseases often appear together, and one of the most important and complicated combinations is the presence of hydrocephalus along with congenital heart defects in newborn children. Hydrocephalus is a condition where an excessive amount of cerebrospinal fluid collects inside the brain, which can cause pressure to build up and damage the brain. On the other hand, congenital heart defects are problems with the structure of the heart that are present from birth and can affect how blood flows through the heart and to the rest of the body.

When a child is born with both hydrocephalus and a heart defect, their condition becomes more serious and more difficult to manage. These children may show signs like poor feeding, breathing problems, and delayed development, which can be caused by either or both of the conditions. Because of this, it is very important

to understand how congenital heart defects appear and progress in children who also have hydrocephalus. This paper will look at how congenital heart problems develop in children who are born with hydrocephalus. It will focus on the signs and symptoms doctors see, the problems in diagnosing these children, and the best ways to treat them early and effectively. The goal is to improve care and life quality for these children through better understanding and medical support.

Literature review and method

Children born with hydrocephalus often present with multiple congenital anomalies, among which congenital heart defects are of critical importance. Understanding the interaction between these two conditions is essential for improving clinical outcomes. Hydrocephalus, characterized by abnormal accumulation of cerebrospinal fluid in the brain's ventricles, can influence the overall hemodynamics and oxygenation status of the infant. When coupled with congenital heart defects, which inherently impair circulatory efficiency, the clinical picture becomes more complex. This paper aims to explore the unique clinical characteristics, diagnostic complexities, and treatment considerations in children who suffer from both conditions simultaneously. Identifying these features is important for developing targeted therapeutic strategies and for early detection to improve life expectancy and quality.

Hydrocephalus in newborns is primarily due to disturbances in cerebrospinal fluid dynamics. It may result from overproduction, obstructed flow, or impaired absorption of CSF. In neonates, congenital hydrocephalus is often associated with neural tube defects, intraventricular hemorrhage, or genetic syndromes. The accumulation of CSF leads to increased intracranial pressure, ventricular dilation, and compression of brain parenchyma. These alterations can disrupt autonomic regulation and the neurodevelopmental trajectory of the infant. In severe cases, hydrocephalus may also cause cranial nerve dysfunction and delay in motor and cognitive milestones. This neurological stress can exacerbate the clinical burden when associated with a congenital heart defect, further complicating systemic regulation.

Congenital heart defects (CHDs) are structural abnormalities in the heart or great vessels that arise during embryonic development. These can be classified based on their hemodynamic effects: cyanotic vs. acyanotic, obstructive vs. non-obstructive, and simple vs. complex lesions. Common types include ventricular septal defects, atrial septal defects, patent ductus arteriosus, and Tetralogy of Fallot. Genetic factors, maternal infections, environmental exposures, and syndromic associations contribute to their occurrence. Importantly, syndromes such as Down syndrome or Dandy-Walker malformation, which are associated with hydrocephalus, often co-occur with cardiac anomalies, indicating a shared embryological pathway or common teratogenic triggers.

The co-occurrence of hydrocephalus and CHDs is not merely coincidental but may stem from common embryologic disruptions. Both systems-the central nervous system and cardiovascular system develop simultaneously during the early gestational period. Genetic syndromes affecting cellular migration, apoptosis, or

signaling (such as neural crest cell dysfunction) can affect both organ systems. Hemodynamic instability due to a heart defect can also influence cerebral blood flow, contributing to ischemic or hemorrhagic brain injury, potentially exacerbating hydrocephalus. Furthermore, systemic hypoxia from cyanotic CHDs may impair brain development, complicating the hydrocephalic condition. Thus, understanding this interrelation is vital for early multi-system screening.

Diagnosing both hydrocephalus and congenital heart defects in neonates requires a multidisciplinary approach. Clinical symptoms of increased intracranial pressure may overlap with signs of heart failure, such as irritability, poor feeding, and lethargy. Neuroimaging via cranial ultrasound, MRI, or CT scans is critical for diagnosing hydrocephalus, whereas echocardiography is essential for identifying structural cardiac anomalies. However, conducting these investigations in neonates, especially those in critical condition, is challenging. Sedation, motion artifacts, and comorbidities may limit imaging quality. Additionally, some syndromes may mask or mimic either condition, delaying diagnosis. Hence, early genetic testing and integrated prenatal screening are increasingly recommended.

In children born with both hydrocephalus and congenital heart defects, clinical presentation can vary significantly depending on the severity and combination of the anomalies. Symptoms may include macrocephaly, developmental delay, cyanosis, tachypnea, and feeding difficulties. The progression of each condition may influence the other; for instance, increased intracranial pressure can impair respiratory drive, worsening cardiac output, while poor cardiac function can limit cerebral perfusion. Moreover, comorbidities such as seizures or failure to thrive are more prevalent in these children. Long-term neurodevelopmental outcomes are often worse compared to children with isolated hydrocephalus or CHDs, necessitating continuous monitoring and interdisciplinary care.

Treatment requires coordinated interventions targeting both neurological and cardiac anomalies. Hydrocephalus is commonly treated with ventriculoperitoneal shunting or endoscopic third ventriculostomy, while CHDs may require pharmacologic management or surgical repair. The timing of interventions is critical, as cardiac instability may delay neurosurgical procedures and vice versa. Anesthesia risks are heightened in the presence of both conditions. Prognosis largely depends on the severity and type of CHD, presence of syndromic features, and success of early interventions. Postoperative complications, including shunt malfunction or heart failure, must be anticipated. Multidisciplinary follow-up is essential for improving functional outcomes and reducing mortality.

When compared with neonates having either hydrocephalus or CHDs alone, those with both conditions show significantly higher morbidity and mortality rates. Developmental assessments reveal lower cognitive scores and motor function indices. Hospital stays tend to be longer, with more frequent readmissions due to complications. These children also demonstrate a higher need for assistive technologies and special education services. Quality of life assessments show lower parental satisfaction due to the complexity of care. These findings highlight the

compounded effect of dual pathology, underscoring the necessity for early intervention and personalized management protocols for affected children.

A growing body of literature has explored the coexistence of hydrocephalus and congenital heart defects. Several studies suggest that genetic syndromes like CHARGE, VACTERL, and trisomy conditions play a crucial role in their co-manifestation. Research indicates that early diagnosis and intervention, particularly within the first six months, significantly improve survival. However, most studies are limited by small sample sizes and short follow-up durations. A gap remains in understanding the long-term neurodevelopmental outcomes and optimal sequencing of surgical interventions. Literature also highlights the need for integrated care models involving pediatric cardiologists, neurologists, and geneticists. Further large-scale, multicenter studies are required to develop evidence-based clinical guidelines.

Discussion

The concurrent occurrence of hydrocephalus and congenital heart defects in neonates presents a complex clinical picture that requires comprehensive understanding and management. The interplay between neurological and cardiac systems during early embryogenesis suggests that common developmental pathways may contribute to the co-manifestation of these conditions. This overlap is often observed in syndromic cases, where genetic and chromosomal abnormalities underlie both hydrocephalus and structural heart defects. Our review shows that children born with both conditions experience more severe clinical manifestations, slower neurodevelopment, and higher rates of medical complications compared to those with isolated hydrocephalus or congenital heart defects. Increased intracranial pressure can worsen cerebral perfusion, especially in cyanotic heart conditions, and in turn, compromised cardiac output may aggravate the progression of hydrocephalus. This bidirectional relationship emphasizes the importance of early detection and collaborative care.

From a diagnostic standpoint, overlapping symptoms can lead to delayed or missed diagnoses if a multidisciplinary evaluation is not performed. Therefore, routine cardiac screening in neonates with hydrocephalus, and vice versa, should be considered a critical part of neonatal care. Advanced imaging techniques and genetic testing should also be integrated into diagnostic protocols to enable comprehensive assessment. Therapeutically, the presence of both disorders complicates the timing and safety of surgical interventions. While ventriculoperitoneal shunt placement remains the standard for managing hydrocephalus, it may be postponed or modified due to cardiovascular instability. Likewise, cardiac surgery may be delayed due to raised intracranial pressure or ongoing neurological complications. Thus, individualized treatment plans and coordinated surgical scheduling are necessary to improve outcomes. Prognostically, the literature highlights a higher risk of mortality and long-term developmental delays in affected children. These outcomes underline the need for early intervention programs and continuous developmental support post-surgery. In

addition, parental education and psychosocial support play a vital role in ensuring adherence to complex treatment regimens and improving quality of life.

Conclusion

The comprehensive analysis of the clinical progression of congenital heart defects in children born with hydrocephalus reveals a distinct pattern of complexity, which demands a multifaceted clinical approach. This patient population presents a dual burden-neurological and cardiovascular pathologies-which often interact in ways that complicate diagnosis, therapeutic timing, and prognosis. These children are more likely to experience delayed developmental milestones, recurrent infections, and prolonged hospitalization compared to peers with isolated conditions.

Hydrocephalus, characterized by an abnormal accumulation of cerebrospinal fluid in the brain, may affect cerebral perfusion and autonomic regulation. When compounded by congenital heart defects-such as septal defects, outflow tract anomalies, or complex cyanotic conditions-this creates a scenario where the brain and heart continuously affect each other's function. Increased intracranial pressure may impair cardiovascular regulation, while insufficient cardiac output may worsen cerebral hypoxia, exacerbating neurodevelopmental outcomes.

The findings suggest that such co-morbid conditions are not merely coincidental but may stem from shared embryological disruptions during the early stages of fetal development. This underscores the importance of early antenatal diagnostics, including advanced fetal echocardiography and neuroimaging, particularly in pregnancies with known risk factors such as maternal diabetes, infections, or familial history of genetic disorders. The management of these children requires close collaboration between pediatric neurologists, cardiologists, geneticists, and surgeons. Timely ventriculoperitoneal shunting for hydrocephalus and staged or corrective cardiac surgery play critical roles in stabilizing these patients. However, the risk of complications during anesthesia, increased susceptibility to infections, and complex post-operative care demands necessitate individualized care plans.

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THE NEED FOR STATE SUPPORT AND REGULATION OF ENTREPRENEURSHIP

Annotatsiya. *The relevance of this article is explained by the importance of small business and private entrepreneurship in the socio-economic development of the country and the need to regulate and support the activities of business entities by the state. The purpose of the research work is to analyze the theoretical and practical foundations in the field of government regulation and support for entrepreneurship. To achieve this goal, the article uses methods of economic-statistical and theoretical analysis, which systematize the goals and objectives of state regulation of business activities, define its main directions, and scientifically assess the need for state support for small businesses. proposals and recommendations have been developed.*

Key words: *state regulation of entrepreneurial activity, factors for the development of entrepreneurial activity, state support, small business*

Introduction. Given that entrepreneurship is a unique system, state support is a necessity. In our republic, special attention is paid to state support and development of entrepreneurship. Its development with clearly defined goals and objectives allows for effective means of state intervention in the entrepreneurial process. In economically developed countries, entrepreneurship mainly includes a large layer of economic entities that determine the socio-economic level of development of the country. High flexibility and mass coverage of almost all sectors of the country's domestic market ensure the stability of economic development. Entrepreneurship is the most flexible form of business life. In this sector of the economy, the bulk of the ideas that serve as the basis for increasing the competitiveness of goods in the domestic and foreign markets are being created.

On the other hand, entrepreneurship in its activities is more closely connected with the internal economic situation. Therefore, there is a need to equalize the objective opportunities of entrepreneurs through appropriate regulatory instruments. This determines the need to adequately conduct state economic policy and protect entrepreneurship in the domestic market by forming the necessary rules of conduct for business entities. The state, as a macro-institutional organizer, plays the role of an organizational structure that shapes the institutional conditions for the activities of business entities.

Foreign practice shows that today there is no highly developed country where the state does not regulate the main socio-economic processes to some extent, one

of which is the development of entrepreneurial forms of management. State regulation in the field of entrepreneurship is a necessary tool of economic policy in countries with a market-based management system, where the market is self-governing and the state management mechanism is regulated. State policy is implemented in relation to business based on the theoretical positions of representatives of various economic schools.

Analysis of the literature on the topic. Many economists have paid special attention to the issue of state regulation in their scientific research, but there is no single view on the essence of state regulation of the economy. N.A. Mikhalchenkova and T.M. Smetanina offer the following definition of state regulation: this is a system of "standard measures of a legislative, executive and control nature, carried out by authorized state bodies and public organizations in order to stabilize the existing socio-economic system and adapt it to changing conditions." [1].

According to V.P. Oreshin, state regulation is "the activity of state bodies to influence the process of social reproduction in order to achieve socially beneficial results." [2].

Neopulo K.L. [3] in their works justify the need to change measures to support small businesses in order to increase business activity and develop incentive approaches that affect the increase in entrepreneurial activity. A. A. Kritskaya [4], E. A. Borkova [5] studies analyzed measures to support small businesses during the pandemic, as well as the problems of their implementation at the regional level.

Some scientific studies have based their work on the possibility of further stabilizing the activities of economic entities based on the scientific results obtained from modeling in regulating the activities of small businesses[6]. It is through modeling that countries' direct investments, energy consumption, level of economic development, and opportunities for using renewable energy were considered[7].

Research methodology. The methodological basis of this research work is the analysis and assessment of theoretical and practical foundations in the field of state regulation and support of entrepreneurial activity. Within the framework of the research, empirical, experimental-theoretical and specific scientific methods such as comparison, analysis, synthesis, induction, deduction, statistical methods were used.

Proponents of various models of economic development express the views of various economic theoretical currents on the role of the state in a market economy. Based on the analysis of the development of the economy after the First World War, J. M. Keynes based his theory on the vital need to create centralized control over issues subject to private initiative. According to him, “the state should exert its influence on the propensity to consume partly through an appropriate tax system, partly by setting the interest rate, and perhaps in other ways”[8].

J. M. Keynes's ideas about the positive impact of government spending on the economic situation have been widely used in practice in a number of countries with a market economy. On this basis, there was an increase in spending on the development of social infrastructure, a number of construction, military and other

programs. The development of the concept of the "multiplier" in the theory of J. M. Keynes, which determines the marginal propensity to consume, led to an increase in the factors regulating economic processes. They began to include the growth of taxes, indicators of public debt. The quantitative relationships between them, as well as the establishment of savings, consumption and employment funds, made it possible to develop macroeconomic models that are used in practice. The experience of the 1970s clearly revealed the serious shortcomings of the theory of aggregate demand. Stimulation of government spending led to an increase in budget deficits and public debt, which were the generators of inflationary processes in the economy. Therefore, by the late 1970s and early 1980s, a shift away from Keynesian methods of regulation began. Instead, the concept of the influence of supply-side factors on economic growth and stability was widely developed.

The neoclassical school and the neoconservative trend that emerged from it in the early 1970s (B. Bosworth, A. Laffer, R. Musgrave, M. Weidenbaum) are based on the ideas of minimizing state intervention and changing its forms. The factors that play a key role in the formation of a competitive environment and a self-regulating economy are, first of all, the monetary mechanism and market prices.

Supporters of institutionalism (D.J. Galbraith), promoting a mixed economy, propose the idea of control over entrepreneurial activity by society[9]. Consequently, although representatives of all schools have significant differences in ideas about the boundaries, forms and methods of state regulation, they recognize the need to combine the market mechanism and the state regulation system for the stable functioning of the market system of economic activity.

Analysis and results. State regulation of the economy is carried out by economic and administrative methods, as well as by one or another combination of them. At the same time, administrative methods are used when economic methods are not effective enough or the country's economy is in crisis. From the point of view of the classical theory of establishing economic equilibrium based on the use of the market mechanism of supply and demand, administrative regulation has a number of disadvantages.

Firstly, it restricts competition, that is, producers and consumers cannot freely accept prices set by state bodies, which leads some producers to preferential conditions in relation to the market and can lead to investment and trade policies of economic entities that are disconnected from the real situation in world and domestic markets; secondly, administrative regulation leads to a significant redistribution of income and taxes between the links of the budget system.

Economic methods of regulation do not violate the conditions of the market mechanism. They affect the economy by increasing production costs, profits, wages, the development of investment activities of small enterprises, increasing the volume of production and sales of products by various business entities, and stimulating consumption.

Methods of economic regulation, ultimately, are aimed at the factors that determine the ratio of supply and demand. This can stimulate an increase (decrease) in the volume of resources in the market or an increase (decrease) in effective

demand. State administration bodies have the ability to regulate the amount of money issued, change accounting rates, taxes, duties.

The state, playing a regulatory role in the formation of the business environment, should provide a set of organizational, legal, socio-psychological and economic measures that will contribute to the development of the most promising areas of entrepreneurial activity, and help business entities adapt to changing environmental conditions (Figure 1).

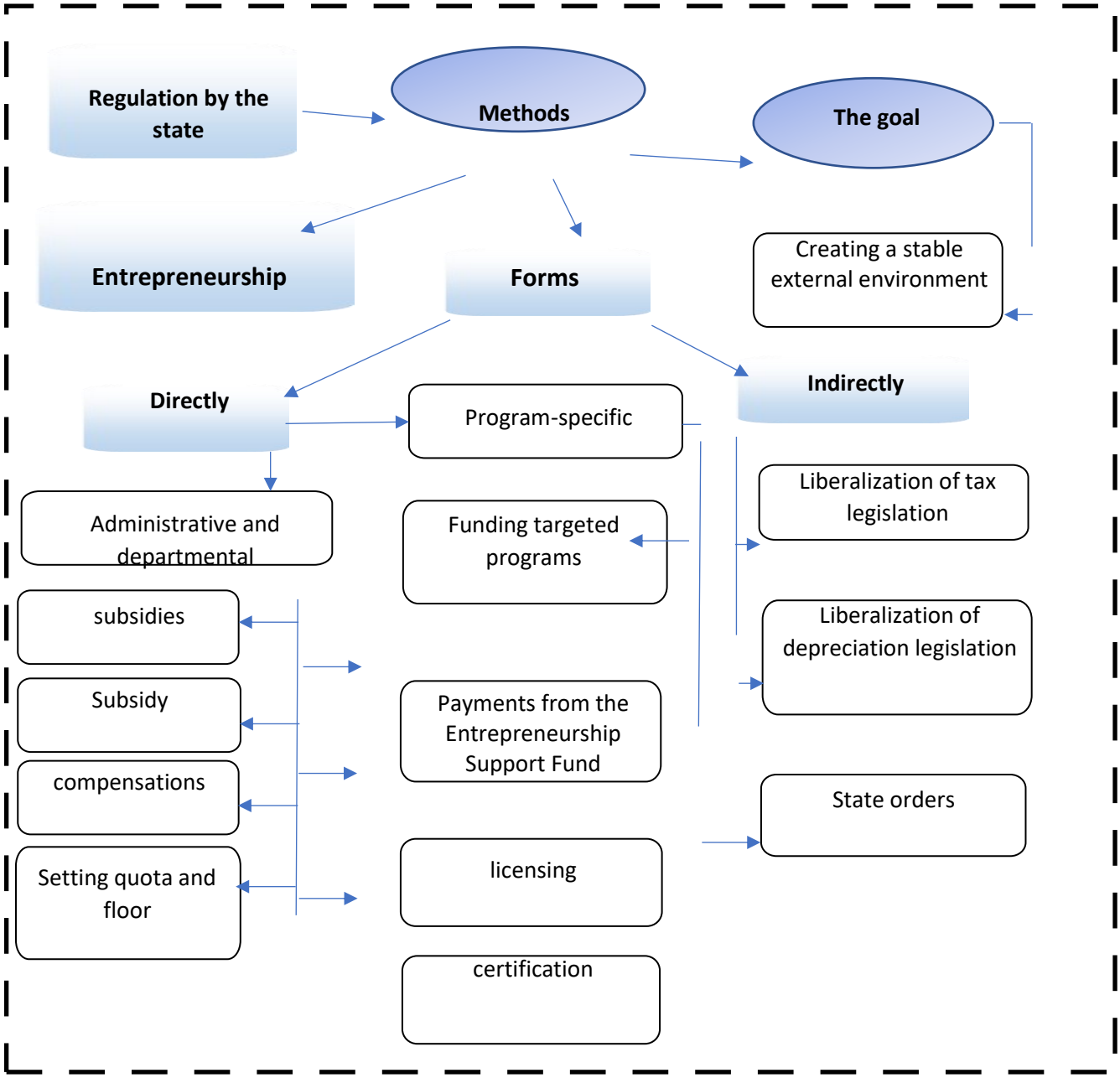

Figure 1. State regulation of entrepreneurship

In accordance with the principles of public administration, the regulation of the process of supporting and developing entrepreneurship should be justified and

ensure the harmony of the interests of society and the entrepreneur. For this, state structures can use direct and indirect methods of supporting entrepreneurship.

Direct methods of state regulation of entrepreneurship are mainly implemented in two forms:

1) administrative and departmental - in the form of direct subsidized financing in accordance with special laws adopted to directly stimulate business development, which include: subsidies; grants; compensations; payments from entrepreneurship support funds; licensing; certification; setting quotas and duties;

2) consists in financing program-targeted programs, in which the state acts as a customer.

Indirect methods of state regulation are aimed at stimulating the process of entrepreneurship development, creating a favorable external environment for the activities of this sector of the economy. These include the liberalization of tax and depreciation legislation, etc.

The ratio of direct and indirect methods depends on the economic situation in the country and the concept of state regulation of entrepreneurship support and development chosen in this regard, that is, market mechanisms or state regulation.

In recent years, state regulation of entrepreneurship in the West has become increasingly generalized and has taken on an indirect character. As J. D. Saks and F. B. Larren emphasize, modern state policy in relation to the business sphere includes the creation and implementation of laws that define the foundations of private entrepreneurship, including commercial codes of private contracts, laws on the creation of new firms[10].

From these approaches, it is important to consider the system of support for entrepreneurship (Figure 2).

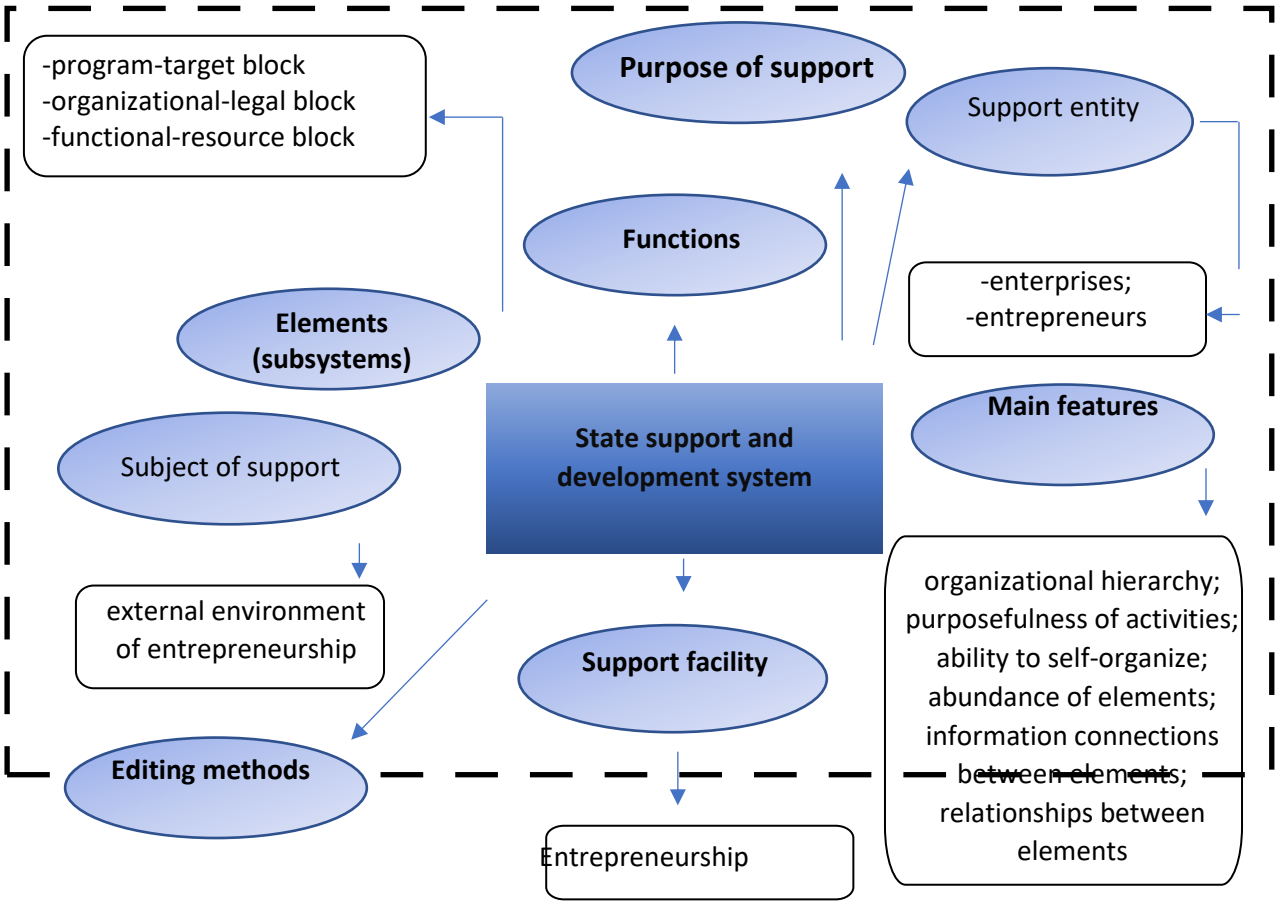

Figure 2. Structure of the system of state support and development of entrepreneurship

The formation of a favorable external environment implies controlled processes. Management methods cannot be exclusively administrative or directive in nature. They are based not on direct influence on business entities, but on measures related to the creation of favorable conditions for the emergence and formation of such entities. The business support system consists of interconnected subsystems, namely, the governing and the managed. The management system (state power and management) provides a process of targeted influence on the object of management - the business sphere (Figure 3).

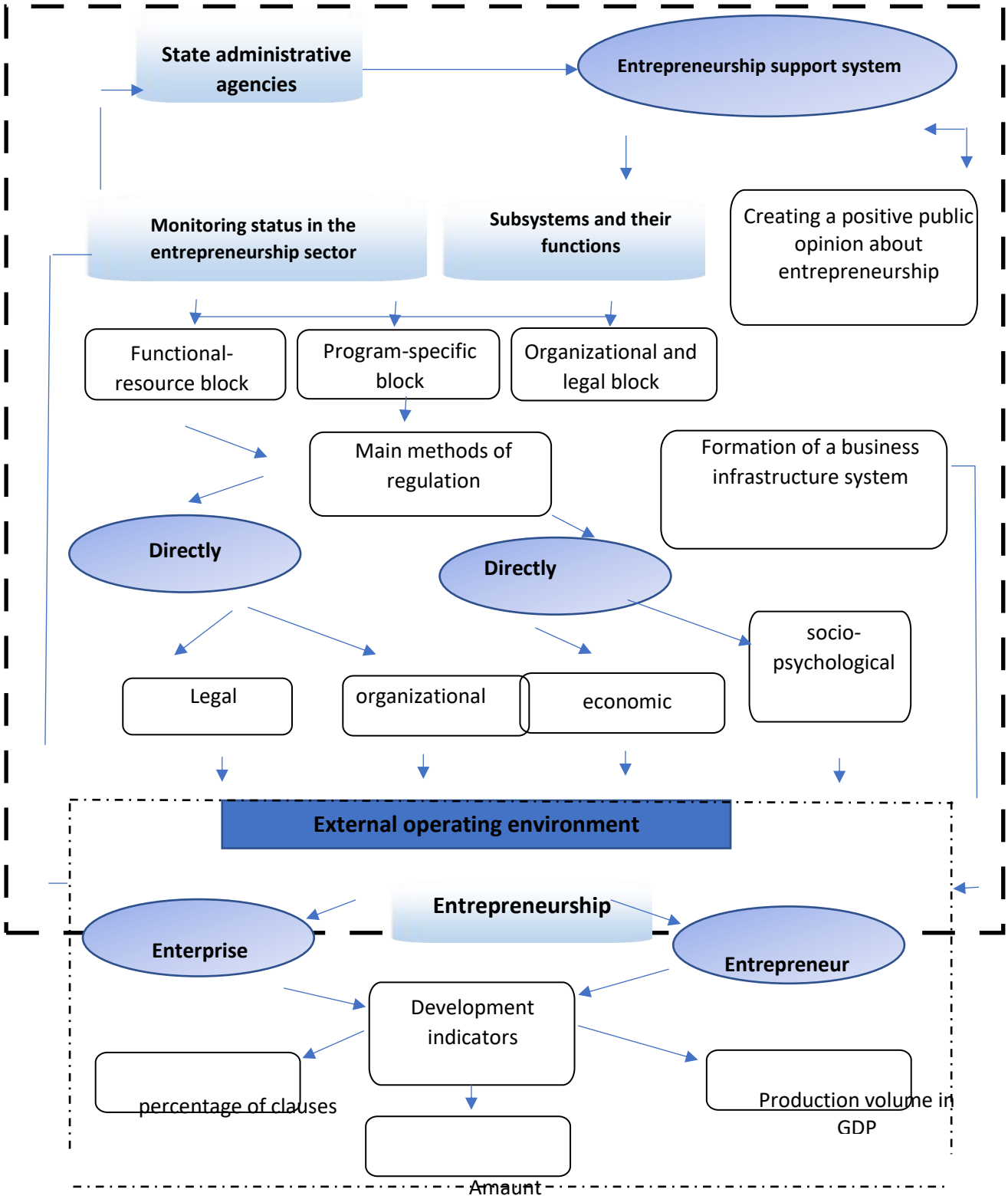

Figure 3. Formation of the external environment of entrepreneurship

At the same time, the principle of feedback is important, which, through the appropriate channels of the system, provides information to the management subsystem about the achievement of planned goals. Detected deviations regulate the behavior of the control system in accordance with the established goals.

The external environment of the enterprise system includes many objects that are not part of the system (with important properties), the change in which can change the state of the system. Environmental objects can include those that affect the behavior of the system and are affected by the system itself. External objects that do not affect the important properties of the system and do not affect the system do not belong to the environment. The external environment of a small business covers a very wide range of variables that in one way or another affect all entities of the business system ("general environment") or mainly individual enterprises or individual private entrepreneurs ("local environment")[11].

A. Hosking notes: "counterparties (seller/buyer, employer/employee, lender/borrower) do not operate in isolation, they operate in a certain environment that determines their position" [12] and identifies seven elements of the external environment: economic situation, political situation, legal environment, social environment - cultural environment, technological environment, institutional organizational and technical environment.

I. Ansoff [13] and other foreign economists include in the external environment all the forces that a small business encounters in its strategic activities.

A. Shulus defines the external environment of entrepreneurship as follows: "a set of elements (markets, market institutions, relationship processes) that directly affect the formation and functioning of the external environment of business.

Such elements are characterized by a number of properties (parameters), the specific state of which includes external environmental factors" [14] and divides the elements of the external environment into five groups (Figure 4):

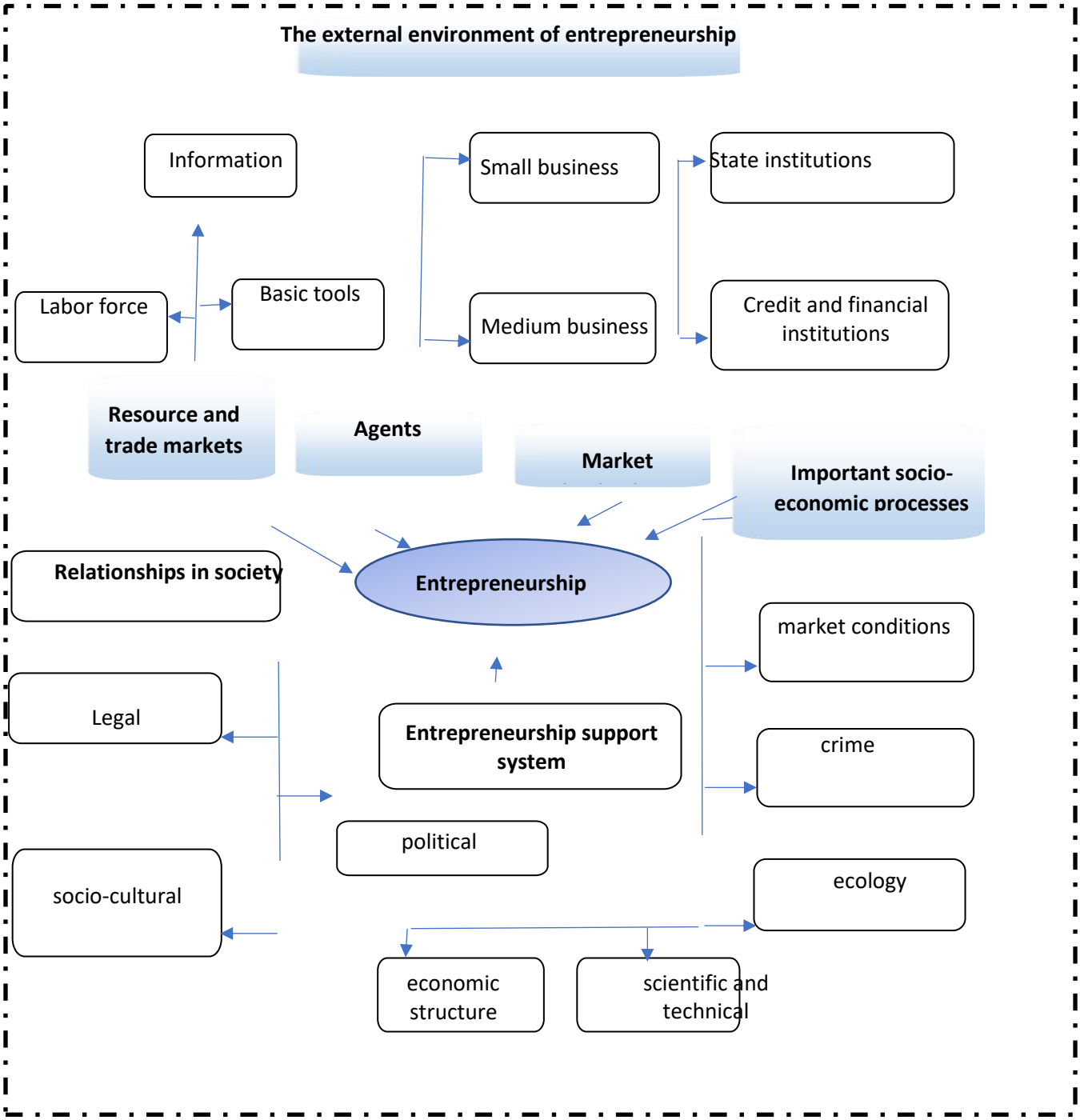

Figure 4. Environmental factors

social relations, market institutions, relevant socio-economic processes, resources and sales markets, market agents in the form of representatives of small, medium and large businesses.

External environmental factors are divided into direct and indirect factors of influence (Figure 5). Direct factors directly affect entrepreneurial activity, this group of factors includes: changes in legislation regulating entrepreneurial activity, competition between entrepreneurs, relations with business partners, tax system, corruption, etc.

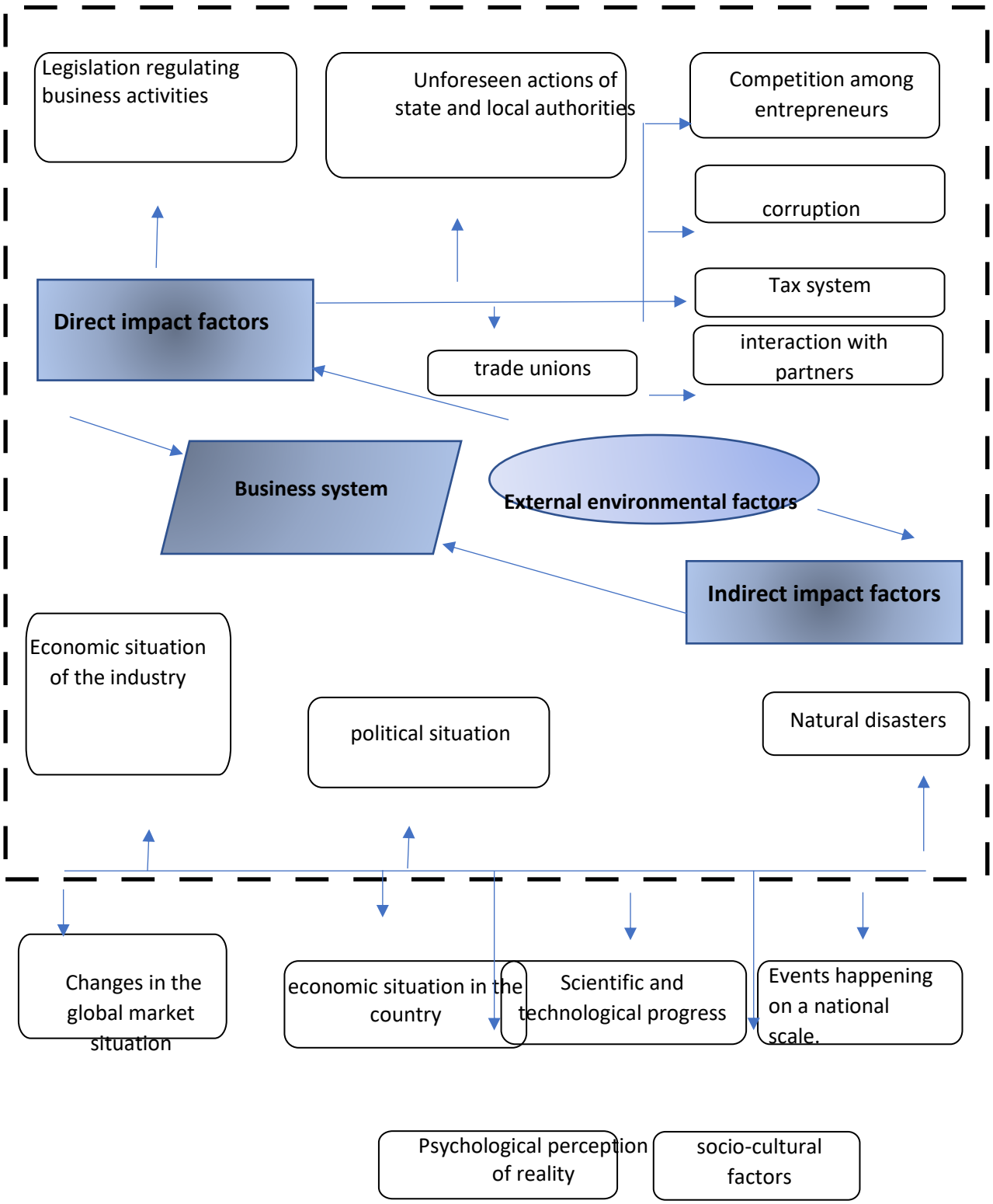

Figure 5. Classification of external business environment factors and their impact on the entrepreneurial system

Indirect influencing factors may not directly affect entrepreneurial activity at once, but lead to its change. These are: the political situation, international events, changes in the world market situation, economic instability in the country, psychological perception of reality, socio-cultural factors, scientific and technical progress, the economic situation in the field of activity, natural disasters. The sustainable development of the national economy, the interdependence of its structural structures give a multidimensional description of the external environment, the elements of which often have a multifaceted impact on economic entities.

Conclusions and proposals. In the modern conditions of the republic's economy, it is important to study the problems of entrepreneurship and the forms of its state support from the perspective of a systematic approach. The systems approach is considered as a methodology for studying and solving complex problems based on the general theory of systems, understood as a set of general methodological principles for the formation of knowledge about system objects. The most important features of complex systems are: organizational hierarchy, purposeful activity, a large number of elements, the presence of information communication between elements, the presence of interaction between them.

The ability to self-organize is added to the properties of complex systems, which is understood as the ability to purposefully constantly change the structure or values of its parameters of the system based on information about the external environment.

Thus, the systematic approach is aimed at studying a system as a whole, when the principles of organizing elements into a single system are studied, and the functioning of each subsystem and individual elements is considered from the point of view of the main goal of the system, while the systematic approach is aimed at studying the system as a whole, when the principles of organizing elements are studied, the functioning of each subsystem and individual elements is considered from the point of view of the main goal of the system. With the help of a systematic approach, it is possible to get a complete picture of the processes of operation of complex systems.

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CAD/CAM TEXNOLOGIYALARINING ORTOPEDIK STOMATOLOGIYADA QO'LLANILISHI

Annotatsiya. *Ushbu maqolada CAD/CAM (kompyuter yordamida loyihalash va ishlab chiqarish) texnologiyalarining ortopedik stomatologiya sohasidagi qo'llanilishi o'rganiladi. An'anaviy stomatologik metodlar bilan solishtirilganda, CAD/CAM texnologiyalari tish protezlarini ishlab chiqish va joylashtirish jarayonini soddalashtiradi, vaqtni qisqartiradi va aniqlikni oshiradi. Tadqiqotda texnologiyaning asosiy afzalliklari, uning klinik qo'llanilishi, hamda mavjud cheklovlari tahlil qilinadi.*

Kalit so'zlar*: CAD/CAM, ortopedik stomatologiya, tish protezi, raqamli texnologiya, stomatologik protetika.*

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APPLICATION OF CAD/CAM TECHNOLOGIES IN ORTHOPEDIC DENTISTRY

Abstract*. This article examines the application of CAD/CAM (computer-aided design and manufacturing) technologies in the field of orthopedic dentistry. Compared with traditional dental methods, CAD/CAM technologies simplify the process of designing and fitting dental prostheses, reduce time, and increase accuracy. The study analyzes the main advantages of the technology, its clinical application, and existing limitations.*

Keywords*: CAD/CAM, orthopedic dentistry, dental prosthesis, digital technology, dental prosthetics.*

Kirish. Zamonaviy stomatologiyada raqamli texnologiyalar, xususan, CAD/CAM tizimlari keng qo'llanilmoqda. Bu tizimlar yordamida tish protezlari, qoplamalar va ko'priklar aniq va tez tayyorlanadi. Odatdagi qolip olish, gips quyish kabi an'anaviy bosqichlar o'rnini raqamli skanerlash va avtomatlashtirilgan ishlab chiqarish egallamoqda. Ushbu maqola CAD/CAM texnologiyalarining ortopedik stomatologiyada qo'llanilishining samaradorligini ko'rsatishni maqsad qiladi.

Metodologiya. Maqolani yozishda ilmiy adabiyotlar tahlili, stomatologik klinikalarda kuzatuv usuli, va ayrim tajriba natijalari asosida tahliliy yondashuv qo'llanildi. Jahon miqyosida nufuzli stomatologik jurnallarda chop etilgan maqolalar asosida CAD/CAM texnologiyasining afzalliklari va kamchiliklari

o‘rganildi. Shuningdek, bir necha mahalliy va xorijiy stomatologlarning tajribalari solishtirildi.

CAD/CAM-bu kompyuter yordamida ishlab chiqarishni qisqartirish. O'nlab yillar davomida ishlab chiqarish sanoatida nozik asboblar, ehtiyot qismlar va avtomobillar ishlab chiqarish uchun ishlatilgan CAD/CAM texnologiyasi so'nggi 20 yil ichida stomatologiyaga tobora ko'proq qo'shildi.

CAD/CAM texnologiyasi va metalsiz materiallar stomatologlar va stomatologik laboratoriyalar tomonidan bemorlarga tegirmonli keramik toj, shpon, onlay, inlay va ko'priklar berish uchun ishlatiladi. Dental CAD/CAM, shuningdek, etishmayotgan tishlarni almashtirish uchun ishlatiladigan dental implantlar uchun tayanchlar tayyorlash uchun ishlatiladi.

Yillar davomida CAD/CAM stomatologiyasi uchun mavjud materiallar va texnologiyalar takomillashgani sayin, bemorlar raqamli stomatologiyaning bu shaklidan ham tiklanishi mumkin. Bugungi CAD/CAM restavratsiyalari avvaldan ishlov berilgan restavratsiyalarga qaraganda ancha mos, bardoshli va tabiiy ko'rinishga ega (ko'p rangli va shaffof, tabiiy tishlarga o'xshash).

Dental CAD/CAM texnologiyasi stomatologlar va stomatologik laboratoriyalar uchun mavjud bo'lib, stomatologlar va ularning xodimlariga (yoki laboratoriya mutaxassisiga) kompyuter ekranida restavratsiyalarni loyihalash imkonini beradi. SAPR/CAM kompyuteri tayyor tishlaringiz yoki tishlaringizning optik skaner yordamida raqamli suratga olish natijasida olingan 3 o'lchamli tasvirini ko'rsatadi. Shu bilan bir qatorda, 3 o'lchamli tasvirlarni preparatning an'anaviy taassurotlaridan olingan an'anaviy modelni skanerlash orqali olish mumkin.

Keyin tish shifokori yoki laboratoriya mutaxassisi oxirgi restavratsiyani chizish va loyihalash uchun 3 o'lchamli tasvirlar va SAPR dasturlaridan foydalanadi. Tish shifokori, ofis restavratori yoki laboratoriya mutaxassisi restavratsiyani loyihalashga qancha vaqt ketishi malakaga, tajribaga, ish va davolanishning murakkabligiga bog'liq. Ba'zi holatlar bir necha daqiqa vaqt olishi mumkin, boshqalari esa sifatni ta'minlash uchun yarim soat yoki undan ko'p dizayn vaqtini talab qilishi mumkin.

Oxirgi restavratsiya loyihalashtirilgandan so'ng, toj, inlay, onlay, shpon yoki ko'prik frezalash kamerasida keramik materiallarning bitta blokidan frezlanadi. Qayta tiklash jarayonini dog'lar va sirlar yordamida sozlash mumkin, bu esa tabiiy ko'rinishga ega bo'ladi, uni pechga qo'yishdan oldin (keramika va kulolchilikka o'xshash), so'ngra tugatish va jilolash.

Tadqiqotlar shuni ko'rsatadiki, bugungi kunda maydalangan SAPR/CAMni qayta tiklash avvalgi materiallarga qaraganda kuchliroqdir. Shuningdek, ular sinish ehtimoli kamroq.

CAD/CAM texnologiyasining afzalliklaridan biri shundaki, agar sizning stomatologingiz ofisda texnologiyaga ega bo'lsa, o'sha kuni stomatologiya siz uchun davolanish varianti bo'lishi mumkin. CEREC in-office yoki E4D Dentist System kabi CAD/CAM stomatologiya texnologiyalari, siz kutganingizda, inlay, onlay, toj yoki shponni bitta uchrashuvda tiklash uchun ishlatilishi mumkin.

CAD/CAM texnologiyasi tish shifokori yoki stomatolog laboratoriya mutaxassisi tomonidan berilgan aniqlik va iqtidorni almashtirmaydi. Stomatologlar tishlarning dastlabki tayyorgarligini aniq belgilashlari kerak; stomatologlar ham, laboratoriya texniklari ham raqamli taassurot olishda va restavratsiyani chizishda aniq bo'lishi kerak.

Tiklanishning aniqligi va malakasi bir xil darajada muhim, ayniqsa restavratsiyaning mos kelishi kelajakda tish shikastlanishining oldini olishda muhim ahamiyatga ega. Masalan, noto'g'ri o'rnatilgan toj, shpon, inley yoki onlay tishlar orasidagi bo'shliqni yoki tish tayyorlash va tiklash o'rtasida bo'sh joy qoldirishi mumkin. Bu infektsiya yoki kasallik xavfining oshishiga olib kelishi mumkin.

Shuni ta'kidlash kerakki, har bir tishni SAPR/CAM tiklash bilan davolash mumkin emas. Sizning tish shifokori sizning ahvolingiz uchun SAPR/CAMni tiklash mos keladigan davolanish variantlaridan biri ekanligini aniqlaydi. Bundan tashqari, SAPR/CAM materiallarining estetikasi yaxshilanganiga qaramay, bemorlar ba'zi SAPR/CAM restavratsiyalari juda noaniq ko'rinishini va tabiiy xususiyatlarga ega emasligini sezishi mumkin.

Qayta tiklash turiga qarab (masalan, inleylar/onleylar), sizning tish shifokori moslashuv aniqligi uchun uzoqroq va tasdiqlangan tajribaga ega bo'lgan an'anaviy laboratoriya texnikasini afzal ko'rishi mumkin. Shuning uchun, bemorlar tish shifokorlari bilan o'zlarining shaxsiy ahvollari va xohish -istaklarini muhokama qilishlari kerak, ular to'liq tekshiruv asosida yakuniy davolanish to'g'risida qaror qabul qilishadi.

Kompyuter yordamida dizayn (SAPR) va kompyuter yordamida ishlab chiqarish (CAM) so'nggi 25 yil ichida stomatologiyaning tobora ommalashgan qismiga aylandi. Stomatologiya laboratoriyasida ham, stomatologiya kabinetida ham qo'llaniladigan texnologiya inley, onley, shpon, toj, fiksatsiyalangan qisman protezlar, implant abutmentlari va hatto og'izni to'liq rekonstruksiya qilishda qo'llanilishi mumkin. Ushbu maqola stomatologiyada CAD/CAM tarixini muhokama qiladi va uning qanday ishlashi haqida umumiy ma'lumot beradi. Shuningdek, u afzalliklari va kamchiliklari haqida ma'lumot beradi, mavjud bo'lgan asosiy mahsulotlarni tavsiflaydi, yangi texnologiyani amaliyotingizga qanday kiritishni muhokama qiladi va kelajakdagi ilovalarga murojaat qiladi.

Kompyuter yordamida dizayn (SAPR) va kompyuter yordamida ishlab chiqarish (CAM) so'nggi 25 yil ichida stomatologiyaning tobora ommalashgan qismiga aylandi. Stomatologiya laboratoriyasida ham, stomatologiya kabinetida ham qo'llaniladigan texnologiya inley, onley, shpon, toj, fiksatsiyalangan qisman protezlar, implant abutmentlari va hatto og'izni to'liq rekonstruksiya qilishda qo'llanilishi mumkin. CAD/CAM ham ortodontiyada qo'llaniladi.

CAD/CAM texnologiyasi 3 ta muammoni hal qilish uchun ishlab chiqilgan. Birinchi qiyinchilik, ayniqsa, orqa tishlar uchun restavratsiyaning etarli kuchini ta'minlash edi. Ikkinchi qiyinchilik tabiiy ko'rinishga ega restavratsiyalarni yaratish edi. Uchinchi qiyinchilik tishlarni tiklashni oson, tezroq va aniqroq qilish edi. Ba'zi

hollarda, SAPR / CAM texnologiyasi bemorlarni bir kun ichida tiklashni ta'minlaydi.

Stomatologlar va laboratoriyalar yangi texnologiya bilan ishlashning turli usullariga ega. Masalan, stomatologlar raqamli taassurot olishlari va uni restavratsiyalarni ishlab chiqarish uchun laboratoriyaga yuborishlari yoki o'zlari kompyuter yordamida dizayn va frezalash ishlarini uyda qilishlari mumkin.

Laboratoriyalar raqamli taassurot olganida, ular ma'lumotlardan tosh modelini yaratishi va an'anaviy ishlab chiqarishni davom ettirishi yoki frezalash uchun modelni qayta ko'rib chiqishi mumkin. Shu bilan bir qatorda, laboratoriya olingan tasvirlar asosida to'g'ridan-to'g'ri kompyuterda barcha dizayn ishlarini bajarishi mumkin.

Stomatologiyada CAD/CAM tarixini muhokama qiladi va uning qanday ishlashi haqida umumiy ma'lumot beradi. Shuningdek, u afzalliklari va kamchiliklari haqida ma'lumot beradi, mavjud bo'lgan asosiy mahsulotlarni tavsiflaydi, yangi texnologiyani amaliyotingizga qanday kiritishni muhokama qiladi va kelajakdagi ilovalarga murojaat qiladi.

Kompyuter yordamida dizayn va ishlab chiqarish 1960-yillarda samolyot va avtomobil sanoatida foydalanish uchun ishlab chiqilgan va birinchi marta stomatologiyada o'n yil o'tgach qo'llanilgan.

Tish SAPR/CAM rivojlanishidagi eng muhim shaxslar qatoriga frantsiyalik doktor Fransua Duret, shveytsariyalik Verner Mörmann, amerikalik Dianne Rekow va shvetsiyalik Matts Andersson kiradi.

Doktor Duret 1971 yilda tayanch tishining optik taassurotiga asoslangan va raqamli boshqariladigan frezalash mashinasidan foydalangan holda tojlar yaratuvchi SAPR/CAM qurilmasini yaratgan birinchi odam edi. U 1983 yilda birinchi stomatologik CAD/CAM restavratsiyasini ishlab chiqardi va 1985 yil noyabr oyida Frantsiya stomatologiya assotsiatsiyasining xalqaro kongressida o'z tizimini bir soatdan kamroq vaqt ichida rafiqasi uchun posterior toj restavratsiyasini yaratish orqali namoyish etdi. Doktor Duret keyinchalik Sopha tizimini ishlab chiqdi.

Doktor Mörmann birinchi tijorat CAD/CAM tizimini ishlab chiquvchisi edi. U tishlarni skanerlashda optikadan foydalanish g‘oyasini ilgari surgan elektrotexnika muhandisi doktor Marko Brandestini bilan maslahatlashdi. 1985 yilga kelib, jamoa optik skaner va frezalash moslamasi kombinatsiyasidan foydalangan holda birinchi stulni qo'yishni amalga oshirdi. Ular qurilmani kompyuter yordamida keramika rekonstruksiyasining qisqartmasi CEREC deb atashdi.

Doktor Rekow o‘rtalarida Minnesota universitetidagi hamkasblari bilan - 1980dental CAD/CAM tizimi ustida ishlagan. Ushbu tizim fotosuratlar va yuqori aniqlikdagi skaner yordamida ma'lumotlarni olish va 5-eks mashinasi yordamida qayta tiklash ishlarini bajarish uchun mo'ljallangan.

Ilk texnologiya inleylar, onleylar, shponlar va tojlarni yaratishga imkon berdi. Yaqinda CAD/CAM tizimlari qattiq qisman protezlar va implant tayanchlarini ta'minlay oldi.

SAPR/CAM dan yana bir foydalanish ortodontikadadir. CAD/CAM tizimlari stomatologiya idoralarida tobora ommalashib bormoqda.

CAD/CAM ga umumiy nuqtai

Qisqacha aytganda, ofis ichidagi stomatologik CAD/CAM tizimlari qo'lda skaner, monitor bilan birga shaxsiy kompyuterni joylashtiradigan arava va frezalash mashinasidan iborat.

Skaner boshi og'iz bo'shlig'iga tish preparatining tepasiga joylashtiriladi va natijada olingan ma'lumotlar monitorda 2-o'lchamli (2-D) yoki 3-o'lchamli (3-D) tasvirlar sifatida ko'rinadi. Dizayn ishlari monitorda amalga oshiriladi va ko'rsatmalar frezalash uchun kompyuter yordamida ishlov berish mashinasiga yuboriladi.

Qayta tiklash chinni prefabrik bloklardan frezalanadi. Variantlar orasida feldspatik, leysit yoki lityum disilikat materiallari, shuningdek, kompozit bloklar mavjud. Qayta tiklash tekshirilgandan va tasdiqlangandan so'ng, u an'anaviy bog'lash usullari yordamida sayqallanadi va kiritiladi.

Ofisdagi frezalash mashinalari natijalari laboratoriya frezeleme mashinalaridagi kabi yaxshi ko'rinadi.

CAD/CAM ning afzalliklari va kamchiliklari

Tish restavratsiyasi uchun CAD/CAM texnologiyasidan foydalanish an'anaviy usullarga nisbatan ko'plab afzalliklarga ega. Ushbu afzalliklarga tezlik, foydalanish qulayligi va sifat kiradi.

Raqamli skanerlar an'anaviy taassurotlarga qaraganda tezroq va osonroq bo'lish potentsialiga ega, chunki quyma, mum-ups, investitsiya, quyish va otish yo'q qilinadi. Sirona ma'lumotlariga ko'ra, CEREC ning eng so'nggi versiyasi bilan yarim kamarli taassurotlar 40 soniyani, to'liq kamonli taassurotlar esa 2 daqiqani oladi.

CAD/CAM ham dizayn va ishlab chiqarishni tezlashtiradi; to'liq konturli tojni maydalash uchun atigi 6 daqiqa ketadi.

Joyda frezalash mashinasining mavjudligi bemorlarning doimiy restavratsiyasini ikkinchi marta tayinlanmasdan, kelgan kuniyoq olishlari mumkinligini anglatadi. Bemorlarga endi vaqtincha restavratsiya qilish kerak emas, ularni ishlab chiqarish va moslashtirish uchun vaqt kerak bo'ladi. Agar anestezika kerak bo'lsa, ular faqat bir marta qo'llanilishi kerak.

SAPR/CAM restavratsiyalarining sifati juda yuqori, chunki o'lchovlar va ishlab chiqarish juda aniq. Henkel tomonidan 117 ta mavzu bo'yicha o'tkazilgan tadqiqotda har bir mavzuda 2 tadan toj qilingan. Bir toj standart tovoqlar va taassurot materiallaridan foydalangan holda jismoniy taassurotlar asosida, ikkinchisi esa elektron taassurotlar asosida tayyorlangan. Tish shifokorlari qaysi biri ekanligini bilmasdan, 68% hollarda elektron taassurot asosida tojni tanladilar.

Ehtimol, an'anaviy taassurotlar sifatining keng o'zgarishini hisobga olgan holda, tayyor mahsulotdagi bu farq ajablanarli bo'lmasligi kerak. 2005 yilgi maqolasida Kristensen laboratoriyalarga yuborilgan taassurotlarni ko'rganligini aytdi, unda tayyorgarlik chegaralarining 50% dan ortig'i sezilmaydi. An'anaviy taassurotlar taassurot materialidagi pufakchalar va yirtiqlar, taassurot materialiga

o'rnatilgan kordonlar yoki boshqa qoldiqlar va etishmayotgan tishlar kabi muammolardan aziyat chekadi.

SAPR/CAM restavratsiyalari tabiiy ko'rinishga ega, chunki keramik bloklar emalni taqlid qiluvchi shaffof sifatga ega va ular turli xil soyalarda mavjud. Seramika og'izda yaxshi kiyiladi, hatto orqa tishlar uchun ishlatilsa ham; chunki u an'anaviy va gibrid posterior kompozit qatronlardan ko'ra ko'proq abraziv emas, bu qarama-qarshi tishlarning minimal aşınmasına olib keladi.

Nihoyat, sifat barqaror, chunki prefabrik keramik bloklar ichki nuqsonlardan xoli va kompyuter dasturi eskirishga chidamli shakllarni ishlab chiqarish uchun mo'ljallangan.

Vaqt va mehnatni tejash xarajatlarni kamaytirish potentsialiga ega va tezroq, yuqori sifatli qayta tiklash va'dasi bemorlarga yoqadi va bemorlar ham g'azablantiradigan taassurotlarga ehtiyoj sezmaslikdan mamnun.

Yana bir afzalligi shundaki, barcha skanerlar kompyuterda saqlanishi mumkin; Holbuki, standart tosh modellari joy egallaydi va noto'g'ri saqlangan bo'lsa, chiplari yoki sinishi mumkin.

Shunga qaramay, CAD/CAM tizimlarining kamchiliklari bor. Uskunalar va dasturiy ta'minotning boshlang'ich narxi yuqori bo'lib, amaliyotchi mashg'ulotlarga vaqt va pul sarflashi kerak. Etarlicha katta hajmdagi restavratsiyaga ega bo'lmagan stomatologlar o'z sarmoyalarini to'lashlari qiyin bo'ladi.

An'anaviy taassurotlarda bo'lgani kabi, optik skanerlashda tish shifokori tiklashga muhtoj bo'lgan tishning aniq qaydini olishi kerak. Skanerlash marra chizig'ini ta'kidlashi va atrofdagi va okklyuziv tishlarni aniq takrorlashi kerak. Raqamli skanerlash an'anaviy taassurotlar uchun juda muhim bo'lgan bir xil turdagi yumshoq to'qimalarni boshqarish, tortib olish, namlikni nazorat qilish va gemostazni talab qiladi.

Raqamli taassurot tizimlari vaqtni tejamasligi mumkin, chunki ular hozirda bir nechta bosqichlarni bajarish zarurati tufayli foydalanilmoqda. Misol uchun, ma'lum skanerlardan foydalanadigan stomatologlar avval tasvirlarni tozalash jarayoni uchun yuborishlari kerak, shundan so'ng stomatolog tomonidan chekkalarni o'rnatish kerak. Keyingi rasmlar ko'rib chiqish uchun klinisyenning stomatologiya laboratoriyasiga boradi va keyin modelni frezalash uchun qaytib keladi. Nihoyat, modellar va qoliplar restavratsiyani tayyorlash uchun klinisyenning stomatologiya laboratoriyasiga yuboriladi.

Natijalar. Tadqiqotlar shuni ko‘rsatdiki, CAD/CAM texnologiyalari yordamida tayyorlangan tish protezlari an’anaviy usullarga nisbatan:

Yuqori aniqlikka ega

Tayyorlash muddati qisqa

Estetik jihatdan mukammal

Bemor uchun qulaylik darajasi yuqori

Shuningdek, ko‘plab stomatologlar bu texnologiya orqali ishlashda ortopedik aralashuvlar samaradorligi oshganini ta’kidlashgan.

Muhokama. CAD/CAM texnologiyasining keng joriy etilishi stomatologiya amaliyotini tubdan o‘zgartirmoqda. Shu bilan birga, u ma’lum cheklovlarga ham

ega. Masalan, jihozlarning yuqori narxi va ularni boshqarish uchun maxsus malaka zarurati mavjud. Biroq, uzoq muddatli istiqbolda bu texnologiya stomatologik xizmatlarning sifatini yaxshilashda asosiy omil bo‘lib xizmat qiladi.

Xulosa. CAD/CAM texnologiyalari ortopedik stomatologiyada yangi bosqichni boshlab berdi. Ularning klinik qo‘llanilishi stomatologik muolajalarni soddalashtiribgina qolmay, balki bemorlar uchun ham ko‘plab qulayliklar yaratmoqda. Kelajakda bu texnologiyalarning yanada takomillashuvi stomatologik amaliyotda kengroq joriy etilishini ta’minlaydi.

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RETAIL BANKING IN THE PROCESS OF DIGITAL TRANSFORMATION THE ROLE OF SERVICES IN INVESTMENT DEVELOPMENT

(In the case of the grain industry)

Abstract: *The article discusses the digital transformation of retail banking services through investment development , economic growth in the country The article covers the analysis of statistical data on the provision of services in digital banks , types and volumes of retail loans, and the experience of developed countries in developing retail banking services. In the process of preparing the scientific article, data comparison, data grouping, and expert assessment methods were effectively used, and the author's conclusions and proposals for the development of retail banking services in the process of digital transformation and their effective use in investing in grain and grain product processing technologies are presented.*

Keywords: *economic growth, economic stability, investment, business environment . websites, mobile application*

Introduction

On February 27, 2020, at a videoconference meeting on “Measures aimed at reducing poverty through the development of entrepreneurship” chaired by the President of the Republic of Uzbekistan Sh.M. Mirziyoyev, it was emphasized that “Poverty reduction does not mean increasing the amount of monthly or pensions, or providing loans to the masses. Previously, commercial banks were mainly focused on providing corporate services to legal entities, which they considered important clients, with investment funds . Today, banks are quite saturated in the corporate services market. The retail banking market is still in the process of formation, and experts believe that this market has great growth potential, since, according to statistics, 50-60% of the population hardly uses banking services. In our opinion, in developing retail banking services, it is necessary to use the experience of leading countries with a developed retail banking system.[1]

Literature analysis and methodology (literature review)

First, let's start by understanding the meaning of the word "retail" or "retail". The word "retail" is interpreted differently in many foreign languages. The term "retailing" in English means "retail trade", while the word "retailer" means "retailer" [2]. That is, according to economist D. Gilbert, a person engaged in retail trade

buys large quantities of goods by investing and "divides them into small quantities for sale to individual consumers" [3].

Doctor of Economic Sciences, Associate Professor Shadmanov E. Sh . According to him, “Financial thinking is the skill and behavior of evaluating decisions about investing funds”[4] on the importance of investing in grain processing technologies, "The importance of ensuring the stability of grain production in the consumer basket" , analyzes a number of economic indicators and reveals the economic content of the need for investment in grain and grain product processing technologies, based on its role and importance in ensuring the socio-economic development of the country today [5]

Results and discussion

When talking about digital transformation, it is important to understand that it is a set of changes to the entire existing model of a particular organization/enterprise, including investment in new technologies, that is, directly related to its structure, development strategy, working with customers, methods of promoting products and providing services, and even corporate culture .**From July 1, 2022, the Ministry of Agriculture of the Republic of Uzbekistan announced the expected minimum price of grain for the 2022 grain harvest based on the analysis of world prices** .

Therefore, from July 1, farmers and clusters put wheat on sale at market prices, which is why the Ministry of Agriculture of the Republic of Uzbekistan announced the expected minimum price of grain based on the analysis of world prices: 3 million/1 ton.[6]. If we look at the analysis of the sale of grade 1 flour at the Uzbekistan Commodity Exchange in 2022, we can see the relative amount of the dynamics of the displays on June 01-14. (Fig . 1)

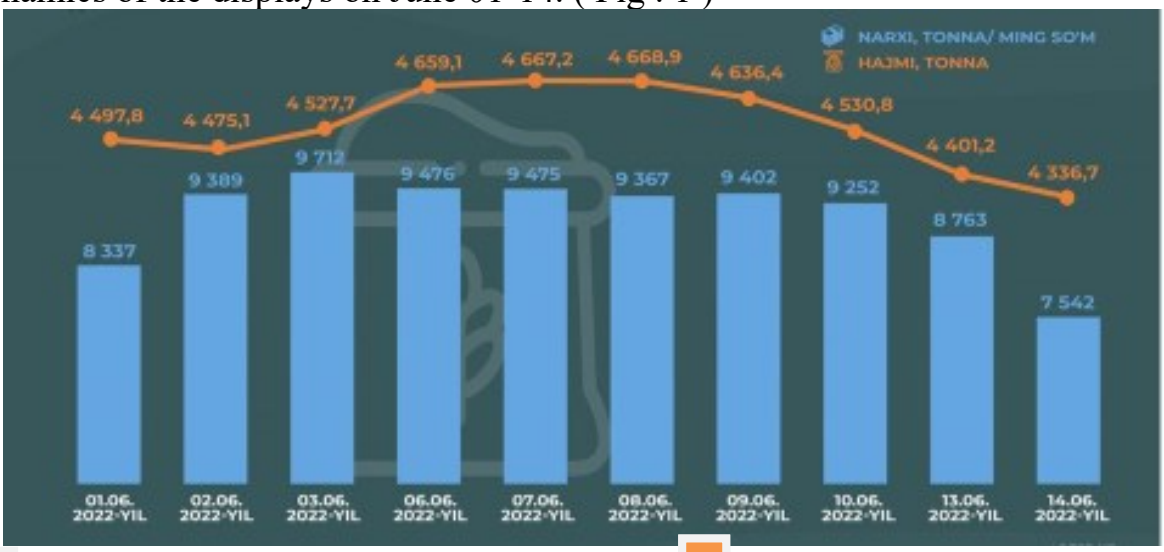

Fig. 1) Analysis of the price of the 1st grade flour sold at the Commodity Exchange of Uzbekistan on 01.01.2022-06.01.2022. [7]

In our opinion, the commodity exchange is in agriculture.It is necessary to implement the following institutional measures to increase the stability of grain products trade:

- a broad and understandable review of proposals for the sale of grain products to potential buyers (daily stock exchange bulletin);

- formation of prices of cereal products at the market price based on supply and demand;

Because the status of agricultural enterprises specializing in the preparation of only one grain in the commodity exchange of all producers is 4 million/1 ton in practice, while it was planned for a minimum of 3 million/1 ton today. As a result, it can be seen that the purchase price of 1 ton of wheat for needs was increased from 1.55 million soums last year to 3 million soums for the 2022 harvest; If we study the market demand based on the population, 1.78 million tons of wheat purchased by the Agricultural Fund will be put on the market based on the demand; 500,000 tons of wheat remaining at the disposal of farmers will be taken to bread production enterprises for temporary storage (temporary storage costs will be covered by the state). As a result, the provision of product delivery in the domestic market will be another global solution that can meet the demand.

The Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030 sets a target of increasing the average yield of grain to 75 t/ha in the future (Table 1). This goal is to be achieved by fully facilitating the needs of grain-growing enterprises for milling and other technologies for grain processing and by developing financial investments from bank funds.

“ Cereals” strategy, which is outlined in the 2030 strategy, aims to achieve sustainability in grain production by investing in new technologies through digital transformation. grain average productivity of **75 s/ ha** increase **"** It is possible to solve the existing problems in ensuring grain production indicators . "

- insufficient supply of products, namely milk, livestock and poultry meat, which are produced at the expense of obtaining cheap feed from harvested and processed grain;

Table 1

Indicators of increasing economic efficiency as a result of the implementation of the Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030[8]

T / R	Indicators name	Basis (2018)	Goal for 2021	Goal for 2025	Goal for 2030
Population food safety provide					
1.1	Average grain size productivity increase	43 per cent	60 per cent	70 s/ ha	75 s/ ha
1.2	Cows average milk productivity increase	2 320 kg/g ' head	2,700 kg/ day head	3 100 kg/g ' head	3 500 kg/ day head
1.3	General crop fields in the composition feed crops fields share	7%	10 %	12 %	15 %

- low level of use of innovative technologies and provision of modern digitalized equipment and automated equipment;

- low efficiency of arable land use and agricultural land turnover;

- low investment attractiveness of the agro-industrial complex and credit obligations Difficulty solving problems will reach .

Conclusion

Digital solutions because of in the world many companies employees and in industry equipment efficiency are increasing . With this together , to customers better service show and buiness in the world to their opponents relatively to success faster achieve. In fact when receiving , digital transformation about when speaking this new to technologies investment to enter own inside received certain organization / enterprise all there is model , that is straight away structure , development strategy , customers with to work , products previously push and service show methods , and even corporate culture such as changes package that understanding need .Achieving sustainability of grain production through investment in new technologies through digital transformation Optimal provision of machinery and tractor fleet at enterprises allows each grain-producing enterprise to perform all technological methods of grain cultivation in optimal terms.

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THE INFLUENCE OF SOCIAL MEDIA ON LANGUAGE DEVELOPMENT

Abstract:*Social media has dramatically reshaped the way we communicate in the digital age. This paper examines the influence of social media on language development, focusing on both its positive and negative effects. The article explores how platforms like Facebook, Twitter, Instagram, and TikTok contribute to the evolution of language, particularly among younger generations. It also discusses the role of slang, abbreviations, emojis, and online communication patterns in shaping modern language use. Finally, the paper addresses the concerns regarding language degradation, digital communication's impact on face-to-face interactions, and the implications for language learning.*

Keywords:*Social media, language development, communication, slang, digital communication, language evolution, emojis, online interaction*

Introduction

In recent years, social media has become an integral part of daily life, influencing not only how we interact with each other but also how we develop and use language. Platforms such as Facebook, Twitter, Instagram, and TikTok have transformed communication into a fast-paced, informal exchange of ideas, often with unique linguistic characteristics. This paper examines the impact of social media on language development, focusing on how it has both enhanced and hindered language skills, particularly for younger users.

The Positive Influence of Social Media on Language Development

Social media has facilitated the creation and spread of new linguistic forms, enriching language by allowing users to experiment with words, phrases, and symbols. One of the most noticeable impacts is the rise of slang and new expressions that often spread rapidly across different groups and cultures. Terms like "selfie," "hashtag," and "binge-watch" have become a part of everyday vocabulary due to social media usage.

Furthermore, social media encourages creativity in communication. Platforms like Twitter, with its character limits, have inspired users to be concise and witty. The use of abbreviations (e.g., "LOL," "BRB," "IDK") reflects a growing trend towards efficiency and brevity in language use, which has affected written and spoken forms of communication. In this sense, social media has contributed to the development of a more adaptive, flexible form of language, particularly for younger generations.

The Negative Influence of Social Media on Language Development

Despite its positive aspects, social media has also contributed to the deterioration of traditional language norms. The frequent use of slang, abbreviations, and emojis often leads to informal and, at times, imprecise communication. This shift toward brevity and informality can result in the reduction of vocabulary and grammar skills, particularly in more formal contexts such as academic writing or professional communication.

Another concern is the impact of social media on face-to-face interactions. As communication increasingly moves online, the ability to engage in meaningful, direct conversations may decline. This can affect the development of interpersonal communication skills, such as empathy, tone recognition, and active listening.

Social Media's Role in Language Evolution

Social media has undeniably played a role in the evolution of language. Words and phrases that were once confined to specific online communities or subcultures have now entered mainstream usage. Emojis and GIFs, for instance, have become an essential part of modern communication, allowing individuals to convey emotions and reactions without words. This form of non-verbal communication, though often criticized, adds another layer to our language repertoire and highlights the increasing importance of visual elements in communication.

Moreover, social media has democratized language, allowing anyone with an internet connection to participate in linguistic innovation. Through viral trends, memes, and hashtags, individuals can contribute to the creation and propagation of new expressions, demonstrating the power of collective language development in the digital age.

Conclusion

Social media has had a profound impact on language development, fostering new linguistic forms while raising concerns about the erosion of traditional language norms. As social media continues to shape communication practices, it is important to balance the benefits of linguistic creativity and flexibility with the need to maintain language standards. In an increasingly digital world, understanding the role of social media in language development is crucial for both language learners and educators.

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TECHNOLOGY FOR THE DEVELOPMENT OF A HEALTHY LIFESTYLE IN STUDENTS OF TECHNICAL HIGHER EDUCATION INSTITUTIONS

Annotation: *This article analyzes the issues of formation and development of a healthy lifestyle among students of technical higher education institutions. A healthy lifestyle is seen as an important factor in maintaining and achieving human health. This article explores the attitudes of young people towards physical activity, proper nutrition, leading a lifestyle free from harmful habits, and highlights the importance of pedagogical technologies used in educational institutions. Special attention is also paid to the issues of innovative approaches to promoting a healthy lifestyle and the effective use of information and communication technologies.*

Keywords: *health, healthy lifestyle, hygiene, physical activity, healthy eating, higher education, student health, healthy environment.*

The promotion of a healthy lifestyle in students of higher education institutions of the Republic of Uzbekistan is one of the current problems in the field of Education. The decree of the president of the Republic of Uzbekistan dated October 30, 2020 “on measures for the widespread implementation of a healthy lifestyle and the further development of mass sports” PF-6099 was issued. In the presidential decree, the broad implementation of a” healthy lifestyle " and the further development of mass sports were established as the main directions. According to the presidential decree, instructions and practical recommendations were given for the regular conduct of sports competitions between families, classes, labor teams and regions in each family, neighborhood and District (City), preschool, general secondary, secondary special, professional and higher educational institutions and other organizations for the development of physical education and mass sports.

Today, the formation and promotion of a healthy lifestyle in our society has become one of the priorities of state policy. Finding a healthy lifestyle, especially among the younger generation, including students of technical higher education institutions — not only provides physical and mental stability, but also directly affects their cognitive activity, professional training and future labor efficiency.

A healthy lifestyle includes factors such as a person's abandonment of negative habits in their vital activity, ensuring physical activity, proper nutrition, personal hygiene, and maintaining psychological stability. Due to the fact that students of technical higher education institutions are more exposed to physical and mental overload, special attention is required to form a healthy lifestyle among them.

The relevance, methods and effectiveness of the introduction of technologies for the development of a healthy lifestyle among students studying in these technical higher education institutions are considered. Also, the existing problems are analyzed and innovative approaches aimed at solving them are studied, as well as the possibility of using modern pedagogical technologies in the educational process.

In the development of a “healthy lifestyle” in students of Technical Higher Education Institutions, first of all, it is important for students to master theoretical and practical knowledge of Health-Health, Hygiene.

Adequate coverage has been provided in tutorials, textbooks, and other literature on promoting a healthy lifestyle. In a healthy lifestyle, we must first take into account health. Health is covered in many literature as follows: Health is not only the absence of illness or physical defects, but also a state of complete physical, mental, social calm. Health must first of all be strong in the psyche-that is, it will be necessary to give methodological instructions on how stress does not come out in students of higher educational institutions. The student must be able to control himself during the time of mental breakdown and engage in other activities to get out of that state.

As for the concept of a healthy lifestyle, a healthy lifestyle is an active action aimed at improving and protecting human health. Leading scientists of the field of “Physical Culture” of the Republic of Uzbekistan on a healthy lifestyle Sh.X. Khonkeldiyev, A.A. Abdullayev and others have released a textbook titled” Physical Culture of Healthy Living". The textbook provides useful information for students of youth, general secondary education school, academic lyceums and vocational colleges, higher education institutions covered in the educational sphere of the Republic of Uzbekistan.

In the textbook” physical culture of a healthy lifestyle", the daily activities of the movement of students are clearly outlined within the framework of regulation. That is, it is implied that each student independently draws up his agenda. The constant presence of the agenda greatly serves to develop the internal and external states of the organism of each student.

The role of a healthy diet in the formation of an agenda is also great, a healthy diet is a diet that ensures the life activity, normative growth and development of a person, strengthens his health and helps in the Prevention of diseases. In a healthy lifestyle, it is necessary to take into account the fact that a healthy diet is rich in nutritional content, and not to want a large amount of food at once. The composition of the food is provided for a sufficient level of minerals, proteins, fats. Each substance affects the negative or positive development of the student.

A large amount of istemolization of fats and carbohydrates leads to an increase in excess weight. Proteins have a positive effect on the growth of body muscles, and on the rapid completion of the injured area. Vitamins are considered the most necessary substance in the human body and serve as a source of energy (energy) in his life. In the development of a healthy lifestyle in students of higher education institutions, it will be necessary to follow the correct diet.

A diet of 3 or 4 times during the day is included in the normative composition. If there is a defect in the student's health, it will be necessary to eat 6 or 7 times less and more often to restore the internal reserves of his body. Basically, in the process of eating, it is also necessary to consume food at the right time. It is recommended to eat breakfast, lunch, dinner not fast when given a normal time of 1 hour, it is recommended to chew each meal bite at least 15-20 times.

No gastrointestinal diseases are caused if the food is consumed in this order. We also knew that we should give theoretical and practical instructions on how students can move away from harmful habits in our development of a healthy lifestyle. In students, ways of developing a healthy lifestyle have been identified in the framework of a certain mechanism.

It is important for students of technical higher education institutions to form and develop a healthy lifestyle — to ensure their physical, spiritual and mental health, to achieve high efficiency in the educational process, and to act as a member of an active and healthy society in the future.

This article shows that in the development of a healthy lifestyle, it is important to effectively use innovative educational technologies, systematically introduce physical education and sports into the educational process, while at the same time forming a positive motivation and worldview in relation to a healthy life in students. Information and communication technologies, interactive methods, psychological trainings and practical training occupy a key place in this process.

Also, the cooperation of parents, educators and other members of society, the formation of skills and competencies related to a healthy lifestyle, strengthening preventive work, the implementation of work aimed at warning against bad habits, serves to improve the quality of life of students.

In conclusion, the development of a healthy lifestyle in technical higher education institutions is an important factor in ensuring a stable and healthy future not only for the health of students, but also for the whole society.

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GAMIFIKATSIYA TIL O'RGANISHDA USLUBIY VOSITA SIFATIDA

Annotatsiya*:Gamifikatsiya – bu o‘yin elementlarini o‘yin bo‘lmagan kontekstlarda qo‘llash bo‘lib, til o‘rganishda istiqbolli metodologik vosita sifatida e’tirof etilmoqda. Ushbu tadqiqot ingliz tilini chet tili sifatida (EFL) o‘rgatiladigan darslarda gamifikatsiyaning o‘quvchi motivatsiyasi va til ko‘nikmalarini rivojlantirishdagi ta’sirini o‘rganadi. Tadqiqot natijalari shuni ko‘rsatadiki, gamifikatsiya o‘quvchilarning darsda ishtirok etishini oshiradi, ichki motivatsiyani kuchaytiradi hamda lug‘at va grammatikani o‘zlashtirishni qo‘llab-quvvatlaydi. Maqola gamifikatsiyani pedagogik amaliyotlarga integratsiya qilish bo‘yicha amaliy tavsiyalar bilan yakunlanadi.*

Kalit so‘zlar: *gamifikatsiya, til o‘rganish, ingliz tili chet tili sifatida (EFL), til o‘rganishda motivatsiya, o‘yin asosidagi o‘qitish, ta’limdagi raqamli vositalar, o‘quvchini jalb qilish, ta’lim texnologiyalari, o‘qitish metodologiyasi, ikkinchi tilni o‘zlashtirish (SLA)*

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Abstract*:Gamification, the application of game elements in non-game contexts, has emerged as a promising methodological tool in language learning. This study explores the impact of gamification on student motivation and language skill development in English as a Foreign Language (EFL) classrooms. Findings suggest that gamification enhances student participation, fosters intrinsic motivation, and supports vocabulary and grammar acquisition. The paper concludes by discussing practical implications for integrating gamification in pedagogical practices.*

Keywords: *gamification, language learning, English as a foreign language (EFL), motivation in language learning, game-based learning, digital tools in education, learner engagement, educational technology, teaching methodology, second language acquisition (SLA)*

Introduction

In recent years, the integration of gamification into educational settings has gained considerable attention due to its potential to transform traditional classrooms into engaging and interactive learning environments. Gamification refers to the use of game design elements such as points, badges, leaderboards, and challenges in

non-game contexts [1]. In language learning, these elements are employed to stimulate learner motivation, increase participation, and facilitate language acquisition through interactive tasks.

Traditional language teaching methods often rely on rote memorization and repetitive exercises, which may lead to disengagement, especially among younger learners [2]. By contrast, gamified approaches emphasize learner autonomy, goal-setting, and immediate feedback, aligning well with communicative and task-based teaching methodologies. This study investigates the methodological value of gamification in the context of English language learning, focusing on its impact on learner motivation and performance.

METHODOLOGY

Research design

A mixed-methods research design was used to assess the impact of gamification in language learning. Quantitative data were collected through pre- and post-implementation surveys, while qualitative data were obtained from classroom observations and semi-structured interviews with teachers and students.

Participants

The study was conducted in two secondary schools in Eastern Europe, involving 60 EFL learners aged 13–15. Participants were divided into two groups: one experimental group (n = 30) that received gamified instruction and one control group (n = 30) that followed a traditional curriculum.

Gamified elements implemented

The gamified instruction included:

Point systems for class participation and task completion.

Digital badges for language milestones (e.g., mastering 50 new words).

Quizzes and interactive games via platforms like Kahoot! and Quizizz.

Weekly challenges involving peer collaboration and language tasks.

Data collection and analysis

Surveys measured students' motivation and attitudes toward English before and after the intervention using a 5-point Likert scale.

Observation checklists documented engagement, participation, and language use during lessons.

Data were analyzed using descriptive statistics and thematic coding.

RESULTS

Motivation and engagement

Survey results indicated a significant increase in self-reported motivation among students in the gamified group. 83% of students reported that game elements made learning more enjoyable and encouraged regular participation, compared to 47% in the control group.

Classroom observations showed that students in the gamified group were more active in group discussions, more willing to participate in speaking tasks, and spent more time on vocabulary exercises.

Language development

Teachers reported noticeable improvements in vocabulary retention and grammar accuracy. Weekly quizzes revealed a 22% average improvement in test scores in the experimental group, compared to a 9% improvement in the control group.

Interviews suggested that students felt less anxious about making mistakes when engaged in game-based tasks, and they appreciated the immediate feedback and rewards.

DISCUSSION

The findings of this study support existing literature that highlights gamification as a motivational and pedagogically sound approach in language education [2]. The use of point systems, competitive quizzes, and rewards created a dynamic learning environment that promoted student autonomy and engagement. Moreover, the positive emotional atmosphere of gamified classrooms helped lower the affective filter, facilitating language acquisition [4].

While the results are promising, gamification should not replace solid pedagogical planning. The effectiveness of gamification depends on thoughtful integration with learning objectives and alignment with student needs. Teachers must ensure that game mechanics support, rather than distract from, language goals.

CONCLUSION

Gamification presents a powerful methodological tool for enhancing language learning. By increasing motivation, participation, and confidence, gamified strategies can improve both learner engagement and language outcomes. Future research should explore long-term impacts of gamification and its integration with differentiated instruction for diverse learner groups.

Moreover, the effectiveness of gamification lies in its ability to make the learning process more dynamic and learner-centered. When well-designed, gamified elements such as points, badges, challenges, and leaderboards can foster a sense of achievement and sustained interest in language tasks. This not only supports vocabulary acquisition and grammar practice but also encourages communication and collaboration among learners. As educational technologies evolve, integrating gamification into language curricula offers significant potential to create immersive and personalized learning experiences.

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DIFFERENCES IN UNIVERSITY TERMINOLOGY BETWEEN ENGLISH AND UZBEK EDUCATIONAL SYSTEMS

Abstract. *This paper investigates the terminological and functional distinctions between English and Uzbek university-related vocabulary within higher education discourse. The study outlines how divergent educational systems influence language use by comparing structural, cultural, and semantic aspects of core academic terms. The research employs descriptive and comparative linguistic methods to identify gaps, overlaps, and culturally bound expressions in institutional language. Findings emphasize the importance of linguistic and cultural competence in academic translation, communication, and policy-making.*

Keywords: *university terminology, higher education, linguistic equivalence, academic translation, educational systems, English and Uzbek languages, comparative linguistics, loanwords, institutional discourse, academic communication.*

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INGLIZ VA O'ZBEK TA'LIM TIZIMLARI O'RTASIDAGI UNIVERSITET TERMINOLOGIYASIDAGI FARQLAR

Annotatsiya. *Ushbu maqolada oliy ta’lim diskursida ingliz va o‘zbek universitetlariga oid atamalar o‘rtasidagi terminologik va funksional tafovutlar tahlil qilinadi. Asosiy akademik terminlarning tuzilmaviy, madaniy va semantik jihatlari solishtirilib, turli ta’lim tizimlari til ishlatishga qanday ta’sir qilishi aniqlanadi. Tadqiqotda tavsifiy va solishtirma tilshunoslik metodlari qo‘llanilib, institutsional tilshunoslikdagi nomuvofiqliklar, o‘xshashliklar va madaniyatga bog‘liq iboralar aniqlanadi. Natijalar akademik tarjima, muloqot va ta’lim siyosatida lingvistik va madaniy kompetensiyaning muhimligini ta’kidlaydi.*

Kalit so‘zlar: *universitet terminologiyasi, oliy ta’lim, lingvistik ekvivalentlik, akademik tarjima, ta’lim tizimlari, ingliz va o‘zbek tillari, solishtirma tilshunoslik, qo‘shma so‘zlar (kiritmalar), institutsional nutq, akademik muloqot*

Introduction.

University language represents a unique register of academic discourse, characterized by specialized terminology used in administrative, pedagogical, and academic contexts. As Uzbekistan seeks closer integration with international educational standards, especially through the Bologna Process and expanded

English-medium instruction (EMI), the terminological alignment between English and Uzbek becomes urgent and challenging.

Differences in university terminology are not limited to lexical choices but reflect broader conceptual frameworks and socio-educational norms embedded in the structure of higher education institutions. The aim of this paper is to identify and analyze these differences by focusing on frequently used university terms in both English and Uzbek systems and exploring the reasons behind their divergence.

This study draws on theories from comparative linguistics, terminology science, and educational linguistics. Cabré (1999) describes terminology as "the linguistic reflection of specialized knowledge." When applied to university contexts, this knowledge is not only subject-specific but also culturally rooted [1].

The theory of conceptual equivalence (Newmark, 1988) is also relevant here. It suggests that terms with similar surface forms may carry different conceptual meanings across cultures. For example, the Uzbek term *yo'nalish* is commonly translated as *major*, but functionally, it often encompasses broader or even different structural elements [3].

Additionally, discourse analysis provides insight into how academic terms are used in situational and institutional contexts. The institutionalization of meaning, that is, how universities define and use specific terms, plays a crucial role in shaping their interpretation and translation [4].

Methodology.

This research applies qualitative comparative analysis. Data were collected from:

Official university documents in Uzbekistan (academic regulations, student handbooks). British and American university websites. Glossaries of higher education terminology from the British Council, the Ministry of Higher Education of Uzbekistan, and UNESCO.

A corpus of 40 commonly used university terms was compiled. These were categorized into three groups:

1. Direct equivalents (e.g., *semester – semestr*);
2. Partial or functional matches (e.g., *major – yo'nalish*);
3. Culturally bound terms with no equivalent (e.g., *tenure*) [5].

Each term was analyzed for lexical form, semantic scope, and functional usage.

Findings and Discussion

Some terms have been borrowed directly from English into Uzbek academic discourse, often due to international influence or standardization efforts.

- *Credit → kredit*: While form and pronunciation are similar, in Uzbekistan, the academic *kredit* may not match the European Credit Transfer and Accumulation System (ECTS) exactly in terms of contact hours or student workload.
- *Semester → semestr*: This is a direct phonological adaptation.
- *Module*, *syllabus*, *rating* are also widely used but often lack clear, standardized definitions in practice[6].

Certain terms exist in both systems but differ in their depth, scope, or administrative application.

- Major – Yo‘nalish: In American and British systems, a *major* is typically chosen by a student and may be combined with a *minor*. In Uzbekistan, *yo‘nalish* refers to the main field of study but is assigned rather than chosen flexibly.
- GPA – O‘rtacha ball: GPA (Grade Point Average) follows a standardized scale (usually 4.0) in English-speaking countries, while *o‘rtacha ball* in Uzbekistan is often a numerical average not necessarily based on credit-weighted calculation.

Several English academic terms have no precise Uzbek counterpart due to structural or ideological differences in the educational system [7].

English Term	Uzbek Equivalent	Observations
Tenure	–	No equivalent; Uzbek academic staff contracts differ completely.
Dean’s list	–	The honors system was not formalized similarly.
Elective course	*Tanlov fanlari*	Exists, but choice is often limited or guided.
Commencement	*Bitiruv marosimi*	Only a ceremonial equivalent, not a term with institutional significance.

Conversely, some Uzbek terms are untranslatable or misunderstood in English:

- *Davlat granti asosida o‘qish*: Studying under a state-funded quota; no direct U.S./UK parallel exists.
- *Kafedra*: Often mistranslated as *department*, though it more closely resembles a faculty subdivision or chair group.

The terminological discrepancies have real-world implications for:

- Academic mobility: Misunderstandings in transcripts or application documents due to term mismatch.
- Curriculum development: Misalignment in credit systems or degree structures affects joint programs.
- Translation and localization: Accurate academic translation requires awareness of conceptual as well as linguistic equivalence. To bridge these gaps, institutions should invest in:
- Standardized multilingual glossaries
- Translator training in academic discourse
- Cross-institutional terminology harmonization in international cooperation agreements

Conclusion

The study has shown that although many English university terms are present in Uzbek educational contexts — often as loanwords — significant semantic and

functional differences remain. These are rooted in contrasting institutional systems, educational philosophies, and cultural values.

As Uzbekistan continues aligning with international educational frameworks, a more nuanced understanding of university terminology is essential — not only for translators and educators but for students navigating multilingual academic environments. Further research might examine how these terminologies are evolving in bilingual and EMI (English as a Medium of Instruction) contexts in Uzbek universities.

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THE ROLE OF PARALLEL COMPUTING SYSTEMS IN COMPUTER MODELING

Abstract: *Computer modeling is an important tool in modern scientific research and analysis of technological processes. The effective use of computing resources in this process has become a pressing issue. This article analyzes the role of parallel computing systems in computer modeling, their efficiency and the possibilities of accelerating modeling in a multiprocessor environment. Also, the basic principles of parallel algorithms and their application to models of physical processes are considered with practical examples.*

Keywords: *computer modeling, parallel computing, multiprocessor systems, algorithms, efficiency, physical processes*

Introduction

Computer modeling is one of the fundamental foundations of modern science, engineering, and technology. This process allows complex real-world phenomena—from natural processes to economic systems—to be simulated digitally. For example, tasks such as predicting climate change, testing new drugs, or optimizing aerodynamic designs rely on computer models. However, these models often require rapid processing of large amounts of data and high-precision calculations, which exposes the limits of traditional sequential computing methods. Parallel computing systems were developed to solve this problem, which are capable of performing many operations simultaneously using multiple processors or computing cores. This technology significantly speeds up modeling processes and provides scalability. For example, planning systems for NASA's Mars rovers or deep learning models rely on parallel computing systems. The advantages of parallel computing include not only speed, but also efficient management of large amounts of data and optimal use of resources. However, there are also challenges such as synchronization problems and programming complexity.

The purpose of this article is to study the use of parallel computing systems in computer modeling, analyze their advantages and limitations, and consider examples of modern applications. The article aims to provide useful information for professionals and students in the field of modeling.

Methods

The following research methods were used to study the role of parallel computing systems in modeling:

Literature review: Available scientific sources on parallel computing systems were reviewed, including articles on CUDA, MPI, OpenMP, and other technologies. At the same time, the historical development of parallel computing in the field of modeling was also reviewed - for example, the evolution of supercomputers from megaFLOPs to exaFLOPs.

Application synthesis: The application of parallel computing in real-world models was analyzed. For example:

● Simulation of extreme weather events in climate models (Kurth et al., 2018).

● Modeling of metastatic cancer diagnosis in medicine (LYNA system).

● Deep learning models in image recognition (ImageNet, 2012).

Architecture comparison: The differences between shared memory systems and distributed memory systems were evaluated from a modeling perspective. For example, the efficiency of multi-core processors for small models and the advantages of clusters for large data sets were compared.

Technical performance analysis: Parameters such as speed (operations/sec), memory size, and communication costs of parallel systems were studied. For example, the performance of GPUs at the level of 10^{14}–10^{17} operations/sec and the impact of this performance on modeling were considered.

Difficulty assessment: Factors such as synchronization, data exchange delays, and programming complexity were analyzed for their impact on modeling efficiency.

The data was synthesized using state-of-the-art supercomputers (Summit), GPUs (NVIDIA), TPUs, and programming models (MPI, OpenMP). The study focused on real-time modeling and working with large amounts of data.

Results

Parallel computing systems have shown the following results in modeling:

1. Significant speedup: Parallel systems have dramatically reduced computational time by using multiple processors. For example, the training time for a deep learning model was one day in 2014, but in 2018, using parallel GPUs, this time was reduced to two minutes (Ying et al., 2018). In climate models, trillions of data points were processed in a matter of hours, which could have taken weeks with sequential methods.

2. Scalability: Parallel systems have been successfully used for large-scale models. In the ImageNet image recognition competition (2012), millions of images were processed using parallel GPUs, and they performed 10 times better than traditional methods (Krizhevsky et al., 2013). However, as the model size increased, the efficiency was maintained by adding additional resources.

3. Applications in various fields:

● Medicine: The LYNA system diagnosed metastatic cancer with 99.6% accuracy using parallel computing, outperforming human experts (Liu et al., 2018).

● Space exploration: NASA's EUROPA system performed daily planning for Mars rovers in parallel (Barreiro et al., 2012).

● Financial models: Parallel systems allowed for real-time risk calculations in stock market simulations.

4. High-level computing power: In 2018, Gordon Bell Prize winners achieved 10^{18} operations per second (exaflops) using GPUs. This helped to detect previously unseen extreme events in climate models (Kurth et al., 2018).

5. Limitations: Parallel systems have suffered from synchronization problems and communication delays in distributed memory systems. For example, data exchange in clusters slowed down the overall performance by 10-15%, which required additional optimization.

These results confirm the effectiveness of parallel computing in modeling, but indicate that technical and algorithmic solutions are needed to exploit its full potential.

Discussion

While parallel computing systems have provided significant advances in modeling, their effectiveness depends on several factors. First, advantages such as speed and scalability are clearly evident when processing large amounts of data. For example, parallel systems have proven to be effective in projects involving millions of images, such as ImageNet, but for smaller models, serial computation may be sufficient. This suggests that the use of parallel systems should be evaluated on a project-by-project basis.

Secondly, synchronization and communication costs are one of the main obstacles to parallel computing. In distributed memory systems, data exchange delays affect overall performance, especially in real-time modeling. For example, in climate simulations, additional algorithms had to be developed to ensure coordination between processors. Modern technologies, such as MPI (Message Passing Interface), help to reduce communication costs in solving these problems, but full optimization is still an urgent issue.

Third, the economic benefits of parallel computing in modeling are noteworthy. Faster computations reduce costs in financial analysis and enable faster decision-making in weather forecasting. For example, NASA's DART system saved millions of dollars in 1991 by using parallel modeling for transportation logistics (Cross and Walker, 1994). However, the complexity of the programming requires additional resources for training specialists and developing new algorithms.

In the future, new technologies such as quantum computing may further advance parallel modeling. Quantum computers are expected to solve certain problems (such as optimization and molecular simulations) exponentially faster than parallel methods. However, this technology is not yet mature enough for practical application. Therefore, modern parallel architectures such as GPUs and TPUs remain the main tools for modeling today.

Another important aspect of parallel computing is its integration with various disciplines. For example, parallel systems in deep learning models have advanced computer vision and natural language processing, opening up new opportunities in

medicine and social analytics. At the same time, the need to develop algorithms specifically optimized for each area of modeling remains an important direction for future research.

Conclusion

Parallel computing systems have proven themselves as an important tool for improving the efficiency of computer modeling. They provide advantages such as speed, scalability, and optimal use of resources, but they also have limitations such as synchronization, communication costs, and programming complexity. Modern technologies - GPUs, TPUs, and programming models (MPI, CUDA, OpenMP) - partially solve these problems. The results show that parallel computing has provided significant advances in areas ranging from climate models to medical diagnostics, for example, in the ImageNet and LYNA projects.

In the future, new approaches such as quantum computing may further advance parallel modeling, but for now, GPUs and supercomputers remain the main tools. Therefore, parallel computing systems play an important role in the field of modeling and contribute significantly to the development of science and technology. Future research in this area should focus on optimizing algorithms and training specialists.

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SANITARY AND HYGIENIC STANDARDS FOR THE DISPOSAL OF MEDICAL WASTE IN TREATMENT AND PREVENTION INSTITUTIONS

Abstract: *What to pay attention to in the construction, reconstruction and reconstruction of medical waste disposal units of specialized surgical profiles in the territory of the Republic of Uzbekistan . Medical supplies used in the equipment process. The sanitary-technical, sanitary-hygienic, sanitary-hygienic, and epidemic-fighting aspects of the organized institution are of particular importance in the conditions of the sanitary-epidemiological tranquility and public health service of the Republic of Uzbekistan "Sanitary rules and norms for the design, construction and operation of treatment and prevention facilities. and on the approval of hygiene standards" decision.*

Purpose: *to identify shortcomings in the construction and organization of medical waste disposal units prior to the construction or reconstruction of healthcare institutions, reduce the financial losses associated with correcting errors, and prevent violations of sanitary and hygienic regulations. Deviation from these established norms may lead to the widespread transmission of infectious diseases, including airborne and hemocontact infections, among the population. Therefore, it is crucial to inform both construction personnel and medical staff about the potential consequences of such negligence, including the legal liability they may incur, in order to prevent these adverse outcomes.*

Key words: *placement of DPMs, reconstruction, hygienic requirements for land area , medical waste disposal units , hygienic requirements for rooms, hygienic requirements for finishing rooms, daily commute, hygienic requirements for surface of rooms.*

Material and methods: Intermediate sanitary control, final sanitary control and current sanitary control, participation in land selection. Acquaintance with situational plan, master plan and explanatory letter. Review the project. After the completion of the construction works, giving a summary for the start and continuation of the work

Result: Department of centralized disposal of medical waste is a structural structure of DPM. The department of centralized disposal of medical waste is located in specially equipped rooms of the DPM, and collection, temporary storage and neutralization of waste belonging to class B are carried out [1,2,3]. It is not possible to place medical waste centralized disposal within treatment departments

(except for decontamination rooms of laboratories dealing with infections belonging to risk group I-IV)[4].

The unit for the centralized disposal of medical waste will be located in a separate building in the economic area of the DPM area. The distance to residences and public buildings in DPMs, where medical waste is disposed of by incineration, is determined based on the current regulatory documents in the field of technical regulation. A centralized disposal unit for medical waste must have water, sewage system, electricity, ventilation and heating system. The composition of the rooms of the centralized disposal of medical waste, their size, arrangement of the technological process should follow the sequence rules, and they should be divided into "clean" and "unclean" areas[5,6,7]. Carts, containers and other equipment used for the collection, destruction, temporary storage and transportation of waste in the territory of the centralized disposal of medical waste are neutralized here. Department rooms are conditionally divided into the following areas: the "unclean" area includes rooms equipped with equipment for receiving, temporary storage and processing (decontamination) of medical waste of class B, washing, decontamination and distribution rooms[8,9,10].

In cases where the amount of waste is not large, medical waste can be temporarily stored in a separate room. The "clean" area includes a staff room with a sanitary washroom and storage rooms for washed equipment for waste transportation[2]. The centralized disposal unit should be equipped with a refrigerator for the storage of pathological waste[11]. The walls, floors and ceilings of the department rooms should be smooth and resistant to wet cleaning and disinfection. Floors should be resistant to moisture, mechanical impact and non-slip [1]. The upper and inner surfaces of the equipment must be flat and resistant to wet cleaning and disinfection. All rooms should have natural and artificial lighting at the level of requirements of regulatory documents in the field of technical regulation [12]. It should be ensured that the air exchange of the rooms located in this section does not exceed the norms of the microclimate indicator and the amount of air pollutants in the air of the working area, which are specified in the current regulations in the field of technical regulation [10].

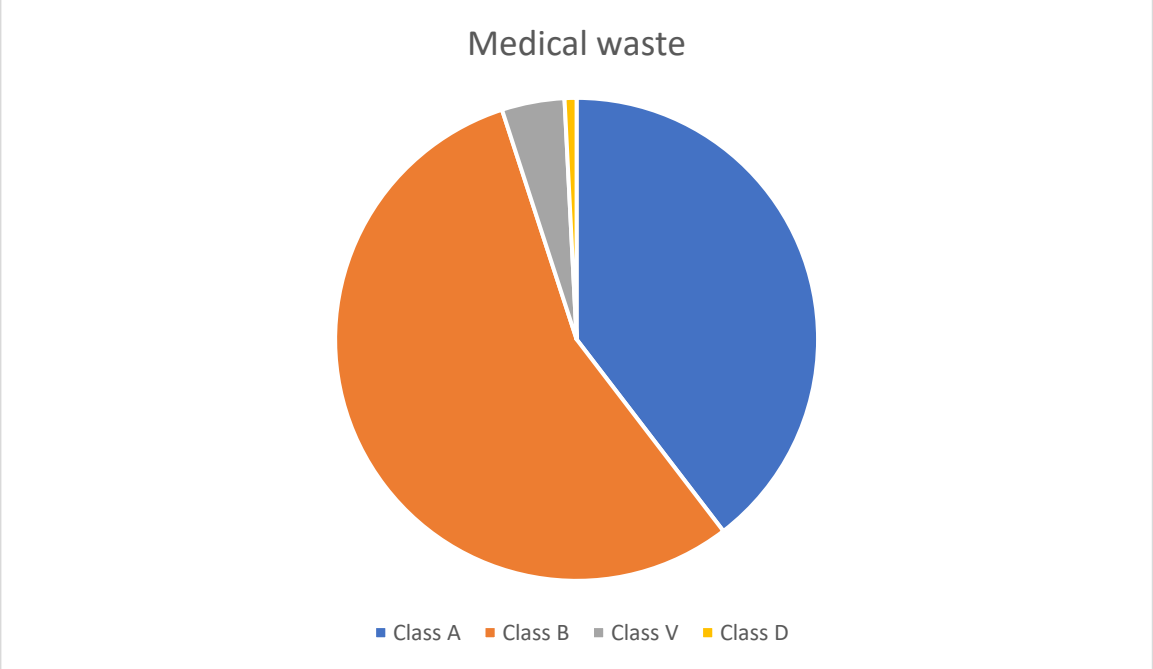
In production rooms, the air temperature should be between 18 and 25 ° C, and the relative humidity should be 75 percent [3]. The main working rooms of the department (waste collection, neutralization, temporary storage, washing and cleaning of equipment) should be equipped with washing taps, and the floors should have a slope (trap) and pallets[9]. Hand washing sinks should be installed in waste decontamination rooms. When placing equipment and equipment, it should be possible to walk freely around all equipment and equipment[8]. At least 0.6 m from the walls to the equipment, at least 1.0 m from the work area. should be the distance in length. The width of the passageways should be at least 0.6 m[7]. Waste decontamination rooms should be equipped with bactericidal lamps or other equipment for decontamination of air. All rooms, facilities and equipment of the department are required to be kept in a clean condition[4]. Current cleaning should be carried out at least twice a day using detergents and disinfectants [6]. Thorough

cleaning works are carried out once a week based on the requirements of regulatory documents in the field of technical regulation. Separately marked washing and cleaning equipment should be available for "clean" and "dirty" areas[5]. These devices should be stored in cabinets or warehouses in separate production areas and used for their purposes. The composition and areas of the rooms of the centralized disposal of medical waste In Table 1 defined.

Table 1

The composition and areas of the rooms of the centralized disposal of medical waste

T/r	**Rooms name**	**The area is m2.**
1.	Medical waste acceptance to do and temporarily storage room	12
2.	To waste neutralization to give room (autoclave room)	16
3.	Containers washing , disinfection and distribution room	12
4.	Employees room	10
5.	Sanitary room with shower	6
6.	"G" and "D" classes belongs to waste temporarily storage room	12



The amount of medical waste generated over one month at the Qiziltepa District Medical Association (kg).

Class A: 55.4 kg
Class B: 39.6 kg
Class V: 4.2 kg
Class D: 0.8 kg

Conclusion: Based on the above, in the establishment of medical waste disposal departments , the Sanitary-Epidemiological Peace and Public Health Committee under the Ministry of Health of the Republic of Uzbekistan approved on January 21, 2022, and registered by the Ministry of Justice on March 4, 2022 "Designing of preventive treatment facilities, it is necessary to follow the sanitary rules and norms No. 0020-22 on sanitary rules, standards and hygienic standards of construction and operation.

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SANITARY AND HYGIENIC STANDARDS FOR RECEPTION DEPARTMENTS

Annotation: *What should be paid attention to in the construction, reconstruction and reconstruction of reception diagnostic departments of treatment and prevention institutions in the territory of the Republic of Uzbekistan. Medical supplies used in the equipment process. The sanitary-technical, sanitary-hygienic, sanitary-hygienic, and epidemic-fighting aspects of the organized institution are of particular importance in the conditions of the sanitary-epidemiological tranquility and public health service of the Republic of Uzbekistan "Sanitary rules and norms for the design, construction and operation of treatment and prevention facilities. and on the approval of hygiene standards" decision.*

Purpose: *To find out the shortcomings in the construction and organization of treatment and preventive institutions before the construction or reconstruction of the institutions, to reduce the material damage spent on correcting the mistakes and to prevent violations of sanitary and hygiene regulations.*

Key words: *placement of DPMs, reconstruction, hygienic requirements for the land area , maternity complexes , hygienic requirements for the rooms, hygienic requirements for finishing the rooms, daily commute, hygienic requirements for the surfaces of the rooms.*

Material and methods: Intermediate sanitary control, final sanitary control and current sanitary control, participation in land selection. Acquaintance with situational plan, master plan and explanatory letter. Review the project. After the completion of the construction works, giving a summary for the start and continuation of the work.

Result: Each hospital should have an admission or admission-diagnosis department. Reception departments should be separate for children, obstetrics, gynecology, infectious diseases, skin-genital, tuberculosis and psychiatric hospitals[1,2,3,4]. Reception rooms of other departments should be shared and located in the main building with the largest number of seats. Har one acceptance in the department sanitation of patients room to be need Acceptance from the department patients treatment departments lay down and transport for comfortable transition ways to be needed [5,6,7,8,9]. One a day during acceptance departments through to the hospital being laid of patients approximate number of hospitals or belongs to in the department seats from number come came out without done increase must Acceptance department patients temporary hospitalization for wards organize done to be need The number of chambers is one per day to the hospital

acceptance to be done patients 10 percent of the number reach needed [10,11,12,15]. up to 50 seats intended hospitals or including anesthesiology, resuscitation and intensive care unit Non- DMP accepted in the department intensive care unit organize will be done. Urgent medical care hospitals include an emergency operating room, a pre-operative room, and anesthesia equipment decontamination rooms. Entrance and exit doors, stairs and elevators in infectious disease hospitals (departments) should be separate for admission and discharge of patients[[13,14,16]. Hospitals (departments) of infectious diseases must have reception boxes (isolators) for receiving patients, and their number is determined as follows depending on the number of beds in the department: up to 60 - 2 boxes; from 61 to 100 - 3 boxes; More than 100 — 3 boxes and 1 additional box for every 50 patient beds (beds) in the department [17,18,19].

Hospitals (departments) of infectious diseases are equipped with boxes and reception boxes (isolators) for the reception of children. In the department of children's infectious diseases, the number of reception boxes (isolators) should be 5 percent of the number of beds, and the number of boxes should be 3 percent[20,21,22]. A delivery room will be organized as part of the reception department of the maternity complex. The flow of patients in the reception department is regulated as follows: in anti-tuberculosis hospitals and health care hospitals - 1 reception department for 800 places; in psychiatric hospitals - 1 admission department for 600 beds; in emergency medical hospitals - 1 reception department for 150 beds; in children's and other hospitals — 1 reception department for 250 beds [4,5,6,8]. Har one 1 per stream to see room and 1 sanitary- cleaning room organize to be done need Acceptance department rooms fields Table 1 according to to be it is necessary

Table 1

Hospitals acceptance department rooms composition and area

T/r	Rooms name		Rooms area , m ^{2}							
			number of beds							
			31-50	51 - 100	101 - 200	201-300	301-400	401-500	501-600	601 and from him more than
1	2		3	4	5	6	7	8	9	10
1.	Lobby, waiting hall		6	12	12	16	18	20	22	24
2.	Registry		-	6	6	6	8	8	8	8
3.	Sanitation - cleaning room (all kind of inpatients for)	sanitary network *	3x2							
		shower and clothes	12							

		replacement room too shower or bath with								
4.	Receive - see boxing separately access place with	contagious diseases hospitals (each for one type of infection separately)	-	12+1.5						
5.	Treatment room	all inpatients for	12							
6.	Bacteriological analysis get material for room	contagious diseases and children in stationary	-	10						
7.	Shock chamber	Urgent medical help and district (city) medicine union (TTB) accepted departments for	-	13 for 1 jacket						
8.	Clean connection room	Urgent medical help and district (city) medicine union (TTB) accepted departments for	-	12	12	15	15	15	15	15
9.	Purulent connection room	Urgent medical help hospitals and district (city) medicine union (TTB) accepted departments for)	-	12	12	15	15	15	15	15
10.	Plastering Plaster storage room room with	Urgent medical help hospitals and district (city) medicine association (TTB) accepted departments for)	-	12+2	12+2	12+3	12+3	12+3	12+3	12+3
11.	X-ray diagnostics room		current sanitary rules , norms and hygiene regulations according to							
12.	Urgent operating room (small	Traumatology and urgent	-	24+8	24+8	24+8	24+8	24+10	24+10	24+10

	operating room room with	medical help hospitals for								
13.	Vaccination room (antirabic and to the coke hall against)	Traumatology and urgent medical help hospitals for	12							
14.	Express laboratory		-	12	12	12	18	18	18	18
15.	Department manager room		-	12						
16.	Big a nurse room		-	12						
17.	Employees room for 1 person doctor for *		6	6	6	6	6	6	6	6
18.	Sanuzel **		3x2							
19.	Collection accessories and disinfectants storage room	all kind of hospitals for	4							
20.	Diagnostic rooms		Hospital direction and diagnostic equipment type looking of these sanitary regulations According to Annex 1 is determined .							

*Note : * 4 and from him more than doctors for the room area is less than 32 m ^{2} not to be need*

*** toilets patients (men 1 for women for - 1) and medical employees for too separately to be need*

Conclusion: Based on the above, in the organization of admission diagnostic departments, the "Design, construction and operation of preventive treatment facilities" approved on January 21, 2022 and registered by the Ministry of Justice on March 4, 2022 of the Sanitary-Epidemiological Peace and Public Health Committee under the Ministry of Health of the Republic of Uzbekistan It is necessary to follow the sanitary rules and norms No. 0020-22 on sanitary rules, norms and hygienic norms of

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CHO`L LANDSHAFTLARI TABIATINING SHAKLLANISH JIHATLARI

Annotatsiya. *Maqolada cho'l landshaftlarining vujudga kelishi, shakllanishi va rivojlanishida, ularning makon va zamonda geografik tarqalishida yetakchi omillari haqida yoritib o'tilgan. O`rta Osiyoda cho`l landshaftlarining shakllanish xususiyatlari, jumladan, Qarshi cho`lining o`ziga xos jihatlari haqida bayon etilgan.*

Kalit so'zlar. *arid, cho`l, bug`lanish, yog`in, landshaft, zonallik, regional, subtropik, tropik, mo`tadil.*

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ASPECTS OF THE FORMATION THE NATURE OF DESERT LANDSCAPES

Abstract. *The article examines the leading factors of the emergence, formation and development of desert landscapes, their geographical distribution in space and time. The features of the formation of desert landscapes in Central Asia, including the features of the Karshi desert, are described.*

Key words. *arid, desert, evaporative, sedimentary, landscape, zonal, regional, subtropical, tropical moderate.*

Kirish. Yer sharida issiqlik va namlikning notekis taqisimlanishi tufayli zonallik yuzaga kelgan. Jumladan, Yer yuzasi relyefining xilma-xilligi, quruqlik va dengizlarning bir xilda taqsimlanmaganligi, landshaftlarning rang-barangligi va rivojlanishi zonal va azonal omillarning yig'indisining o'zaro ta'siri natijasidir. Jahondagi cho`llarni o`rganish va o`zlashtirish muammosi keyingi yillarda ko`pgina mamlakatlardagi olimlarning, shu jumladan geograflarning ham tadqiqot obyektlaridan biri hisoblanadi. Cho`llarni o`rganishda BMT YUNESKOning arid zona bo`yicha komissiyasining faoliyati ancha katta imkoniyat yaratdi. YUNESKO Arid zonasi bo`yicha komissiya faoliyatining ilmiy ma'ruzalari va tavsiyalari "Arid zonani tadqiq qilish *–Arid Zone Research*" deb nomlangan 30 dan ziyod

to`plamlarda chop etildi. Binobarin, bizning ilmiy izlanishlarimizda ham arid zonalarda shakllangan cho`llarni o`rganish muhim ahamiyatga ega.

Asosiy qism. Cho`llar – geografik qobiqda, Yer yuzasida issiqlik va namning o`ziga xos taqismlanishi va organik olamning unga bog`liq holda rivojlanishi natijasida tarkib topadigan zonal landshaft tipidir. Cho`l landshaftlarining vujudga kelishi, shakllanishi va rivojlanishida, ularning makon va zamonda geografik tarqalishida bir necha omillar yetakchi o`rin tutadi. Bular geografik qobiqning zonalligi, issiqlik va namlikning notekis taqsimlanishi, orografik to`siqlar, subtropik kengliklarda yil davomida atmosfera bosimining hukmronligi, sovuq dengiz oqimlarining materik sohillariga ta`siri va boshqalardir.

Cho`l landshaftlarining asosiy qismi subtropik, tropik va mo`tadil mintaqalarga to`g`ri keladi. Cho`l landshaftlari muayyan zonal, regional xususiyatlari bilan ajralib turuvchi, o`zining alohida shakllangan ekologik sharoiti bilan yashovchi qonyniyatlariga, rivojlanish va degradatsiyalanish jarayonlarida o`ziga xos xususiyatlariga, dinamik o`zgarish shakllariga ega bo`lgan tabiiy geografik hosiladir. Arid iqlim sharoitida vujudga kelgan cho`l landshaftlari materiklarning ichki qismlarida, okean va dengiz sohillarida, yirik tog` oralig`i botiqlarida, orografik to`siqlarida, baland tog` va platolarda keng tarqalgan.

Berk havzali O`rta Osiyo tabiiy geografik o`lkasi mo`tadil mintaqalarda joylashgan bo`lib, cho`l landshaftlarining vujudga kelishi, shakllanishi va barqaror rivojlanishi uchun hududda hukmronlik qiluvchi arid iqlimli tabiiy geografik muhitning ta`siri katta. O`rta Osiyo o`kasining geografik o`rni, okeanlardan uzoqda joylashganligi, mussonlardan tog` tizmalari bilan to`silganligi, yoz oylarida termik depressiyaning vujudga kelishi, atmosfera yog`inlarining kam bo`lishiga va arid iqlim sharoitining shakllanishiga sabab bo`ladi. Natijada o`lkada yog`in miqdori 100-200 mm dan oshmaydi. [4;132-136 b., 5; C.1090-1095].

Olimlar o`rtasida hozirga qadar «cho`l» atamasi bilan «arid» atamasini tushunishda mutanosiblik yo`q. Ma`lumki, cho`l landshaftlarining aridlik (qurg`oqchilik) darajasi hamma yerda bir xil emas. Shuni e`tiborga olib A.G.Babayev va boshqalar (1986) arid yerlarni aridlik (qurg`oqchilik) darajasiga qarab ekstraarid (o`ta qurg`oqchil, doimiy qurg`oqchilik ehtimoli 75-100%), arid (qurg`oqchil, 50-75%) va chalaarid (chala qurg`oqchil, 20-40%) yerlarga ajratadilar [2; 318 b.].

Cho`l atamasining mazmuni esa cho`l landshaftlarining asosiy mohiyatini, ularning zonal va tipologik xususiyatlarini belgilaydi. Masalan, O`rta Osiyoning cho`l landshaft zonasi ichki zonal farqlariga ko`ra shimoliy cho`l, o`rta yoki tipik cho`l va janubiy cho`lga bo`linadi. Cho`l landshaftlari tipologik xususiyatlariga ko`ra qumli cho`l, toshloqli cho`l, lyossli cho`l, gilli cho`l, sho`rxok cho`l kabilarga bo`linadi. Shunday ekan, O`rta Osiyoning eng katta cho`llaridan hisoblangan, Qizilqum va Qoraqum cho`llari ham arid landshaftlar guruhiga kiradi [1;6-10 b.].

M.P.Petrov (1973) Yer sharidagi cho‘llarni o‘rganib va tahlil qilib shunday xulosaga kelganki, qurg‘oqchilik eng oxirgi nuqtaga borib taqalgan iqlim sharoitiga ega bo‘lgan hududlarni cho`l deb atash mumkin [3; C.485].

Cho`llarga A.I.Solovyov va G.V.Karpov tomonidan 1983-yilda tuzilgan “Tabiiy geografiya bo`yicha lug‘at-ma’lumotnoma”da (rus tilida) berilgan ta’rif geografik nuqtai nazardan ancha mukammal. Ularning fikricha “Cho`l – doimiy yoki mavsumiy issiq, qurg‘oqchil, shuningdek, sovuq va quruq (tog‘lar va tog‘liklarda) iqlim va siyrak, kambag‘al fitotsenozlar tarqalgan hududlardagi landshaft tipidir” [4; C.224].

Qarshi cho`li O`rta Osiyo o`lkasining janubiy qismi markazida O`zbekistonning janubi- sharqida, yani Qashqadaryoning quyi oqimida joylashgan. Qarshi cho`li hududi dengiz sathidan 260-500 m (shartli ravishda) balandlikda joylashgan bo`lib, uning janubiy va janubiy–sharqiy chegarasida joylashgan Alovuddin, Saksondara, Qoraqir va Do`ltali ko`tarilmalari Qashqadaryo va Amudaryo havzasining suvayirg`ichlari hisoblanadi. Shimoliy va janubiy-sharqiy qismi Zarafshon va Hisor tog`larining tog`oldi tekisliklari bilan tutashgan bo`lib, bu tekisliklar daryo o`zanlari bilan kesilgan hamda to`lqinsimon parchalangan relyef shakllarini hosil qilgan.

Qarshi cho`lining janubiy chegarasi O`zbekiston va Turkmaniston davlatlari chegarasi orqali o`tsa, janubiy sharqiy chegarasi Hisor tog`larining g`arbiy yonbag`irlarigacha cho`zilgan, sharqiy chegarasi Kitob-Shahrisabz botig`i va Hisor tog`larining chekkka g`arbiy tog`oldi to`lqinsimon tepaliklaridan o`tkaziladi. Sharqda esa Shaxrisabz – Kitob botig`i bilan tutash bo`lib, ular orasidagi chegara relyefda ifodalanmagan. I.A.Xasanov (1981) ular orasidagi chegarani tepali – to`lqinsimon tog` oldi tekisligining g`arbiy chekkasi bo`ylab o`tkazishni taklif etgan [7; C. 112.].

S.I.Abdullayevning fikricha Qarshi cho`lining Kitob-Shahrisabz tektonik botig`i va G`uzor adirlari bilan hamda g`arbiy chegaralari relyefda yaqqol ifodalanmagan. Qarshi cho`li tektonik jihatdan janubiy Tojikiston tektonik depressiyasining Qoraqum cho`li bilan tutashgan g`arbiy qismida joylashgan [6; 94 b.].

Qarshi cho`li O`zbekiston Respublikasining Qashqadaryo (Qarshi cho`li hududining eng katta qismi), Samarqand, Buxoro va Navoiy viloyatlari hamda Turkmaniston Respublikasining Lebab (ilgarigi Chorjev) doirasida bo`lib, uning umumiy maydoni 13,6 ming km^2 ni tashkil etadi. Qarshi cho`li maydonining aksariyat katta qismi (86% dan ortiqrog`i yoki 11,7 ming km^2) O`zbekistonda va qolgan qismi (1,9 ming $km^2$) Turkmaniston hududi doirasida joylashgan. Biz Qarshi cho`lining O`zbekistonda joylashgan qismini o`rganish bilan cheklanamiz.

O`rta Osiyo janubiy qismining markazida joylashgan Qarshi cho`lining chegaralari shimolda Ziyoviddin-Zirabuloq tog`larining etaklari, janubiy - sharqda Hisor tizmasi, G`uzor, Dehqonobod past tog`lari bilan g`arbda va janubi-g`arbda Sho`rsoy cho`kmasining shimoliy chekkasi va Devxona hamda Chilgumbaz platolarining etaklari bo`ylab o`tadi. Qarshi cho`li Chilgumbaz platosi orqali Sandiqli qumli cho`lidan ajralib turadi [4;132-136 b.].

Qarshi cho`li geografik o`rniga ko`ra subtropik mintaqaning materik ichkarisidagi cho`llar zonasiga, gipsometrik sathiga ko`ra tekislik cho`llariga, iqlim sharoitlariga ko`ra arid (quruq) cho`llarga, litologik-edafik va landshaft

xususiyatlariga ko`ra asosan gilli va qumli cho`llarga mansubdir. Qarshi cho`lida cho`l landshaftlarining xususiyatlari va tuzilmasi landshaft hosil qiluvchi omillarning xususiyatlari bilan bevosita bog`liq.

Havoning o‘rtacha yillik harorati 14,3°C dan 17,0^0 gacha o‘zgaradi. Eng past harorat -25,0^0 -27,0^0 C bo‘lishiga qaramay hududda yanvar oyining o‘rtacha harorati ijobiydir. Qarshi cho‘li hududida yillik yog‘in miqdori unchalik katta emas (Qarshida-237 mm, Muborakda-155 mm). Yoz faslining uzoq davom etishi oqibatida hududda yillik haroratning kattaligi natijasida bug‘lanish 1700 mm ga yetadi, bu esa o‘z navbatida namlik taqchilligi (defitsit)ni vujudga keltiradi. Iqlim bo`yicha rayonlashtirishda Qarshi cho`li alohida iqlim rayoni sifatida ajratiladi.

Xulosa. Qarshi cho`lining agroiqlim imkoniyatlari va xususiyatlari bu yerda dehqonchilikni asosan sug‘oriladigan sharoitlarda tashkil etishni taqozo etadi. Iqlim sharoitlarining bunday xususiyatlari Qarshi cho`lida suv resurslaridan oqilona foydalanish zaruriyatini keltirib chiqaradi. Ammo bu hududning sug‘orish uchun resurslari yetarli emas. Hududda qishloq xo‘jaligi ekinlaridan yuqori mahsulot olish sug‘orma dehqonchilikni talab qiladi. Shu sababli Qarshi cho`lida obikor dehqonchilikni suv bilan ta’minlash Qashqadaryo havzasining va qo`shni havzalarning suv resurslaridan tejamkorlik bilan foydalanilishi taqozo etadi.

Foydalanilgan adabiyotlar ro`yxati.

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QARSHI CHO`LINING GEOGRAFIK XUSUSIYATLARI

Annotatsiya. *Maqolada Qarshi cho'lining geografik o`rniga va relyef xususiyatlariga oid izlanish olib borgan olimlarning qarashlari haqida yoritib o'tilgan. Hududning chegaralarining ayrim tadqiqotchilar tomonidan berilgan fikrlari tahlil qilingan va hududning geomorfologik jihatlari bayoni keltirilgan.*

Kalit so'zlar. *geografik o`rni, relyef, qir, adir, tekislik, eroziya, cho`l, qurg`oqchil, havza,okrug.*

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GEOGRAPHICAL FEATURES OF THE KARSHI DESERT

Abstract. *The article highlights the views of scientists who conducted research on the geographical location and relief features of the Karshi desert. The opinions of some researchers on the boundaries of the Territory were analyzed and the geomorphological aspects of the territory were described.*

Key words. *geographical location, relief, ridge, hill, plain,erosion, desert, drought, pool, county.*

Kirish. YUNESKO (BMT)ning arid zonalarni tadqiq etish bo`yicha olib borgan komissiyasining faoliyati cho`llarni o`rganish bo`yicha ancha katta ilmiy natijalarga erishdi. Ushbu komissiya Xalqaro geografiya uyushmasi bilan hamkorlikda jahonning qurg`oqchil hududlarini o`rganish va o`zlashtirishning eng muhim muammolariga bag`ishlangan qator ilmiy anjumanlar (1951-yildan boshlab)ni o`tkazib kelmoqda. Sir emaski, O`rta Osiyoning markazida joylashgan Qarshi cho`li ham dunyoning arid hududlaridan biri. Hozirgi iqlim o`zgarishi sharoitida Qarshi cho`li landshaftlarida qator muammolar yuzaga kelishi uning tabiatida ham aks etayotganligi tufayli hududda ro`y berayotgan bu o`zgarishlarni tadqiq etish dolzarbdir.

Asosiy qism. O'zbekistonning janubiy qismini ishg`ol etuvchi hududlardan biri Qashqadaryo havzasidir. Geolog, geograf kabi soha olimlari tomonidan

Qashqadaryo havzasi geologik tuzilishining tarixiy rivojlanishi bosqichlari davomida o`ziga xos relyef hosil qiluvchi omillarning ta'siri va yer yuzasining qiyofasi hamda geomorfologik xususiyatlari bo'yicha 3 ta yirik geomorfologik mintaqaga bo'linadi. Havzani tadqiq qilish davomida tog', tog' oldi va tekislik geomorfologik mintaqaga bo'linishiga amal qilingan.

Professor O.Y. Poslovskaya (1959) Qashqadaryoning uchta mintaqaga bo'linishini hududning turli geologik rivojlanish va relyefning shakllanish tarixi bosqichlari bilan relyef taraqqiyotining turlicha yo'nalishga ega ekanligi bilan asoslab berganligi bilan ahamiyatlidir [3; C.142-173.].

Tekislik mintaqasi Qashqadaryo havzasining katta g'arbiy qismini o'z ichiga oladi. Mintaqaning asosiy qismi Qarshi cho'lining qiya tekisligi bilan band. Qarshi qiya tekisligi Qizilqum cho'lining janubi – sharqiy chekkasi hisoblanadi (Mamatov, 1994). Mintaqa doirasida absolyut balandliklar 280 m dan 600 m gacha o'zgaradi.

Geologik va geografik adabiyotlarda Qarshi cho'li nomi bilan yuritiladigan Qarshi qiya tekisligi asosan Qashqadaryo havzasida joylashgan.Qarshi cho`lining chegaralari munozarali bo`lib, tadqiqotchilar tomonidan turlicha yondoshishlar natijasida har xil talqin etilgan. Jumladan, bir qator cho`lshunos tadqiqotchilar O`rta Osiyo cho`l hududlarini tabiiy-geografik rayonlashtirish ishlari bilan shug`ullangan M.P.Petrov (1967), A.G.Babayev va Z.G.Freykin (1977), M.Umarov (1964) va boshqalar [2; C.266., 7;C.112.], Qarshi cho`lini Janubiy Qizilqum rayonining bir qismi sifatida ko`rsatadilar (1-jadval). Ba`zi tadqiqotchilar esa Qarshi cho`liga hududiy jihatdan Qarnob cho`lini, Nishon cho`lini va Sandiqli qumli cho`lini kiritganlar, ayrimlar esa bu cho`lli hududlarni alohida hududlar sifatida tadqiq etish joiz, deb hisoblaydilar.

Qarshi cho`lining hududi Turkmaniston Respublikasining Lebab viloyati va O`zbekiston Respublikasining Qashqadaryo, Samarqand, Buxoro va Navoiy viloyatlari doirasida yastanib yotadi. Qarshi cho`li (Qarshi qiya tekisligi) maydonining 9,63 ming km$^2$ qismi O`zbekistonda hududiga qarashli bo`lsa, qolgan qismi Turkmaniston hududi doirasida joylashgan. Qarshi cho`li hududining eng katta qismi Qashqadaryo viloyatiga qarashlidir.

1-jadval

Ayrim tadqiqotchilarning Qarshi cho`lining geografik o`rni va chegaralari haqidagi fikrlari

№	Mualliflar	Fikrlari
1.	M.P.Petrov (1967), A.G.Babayev va Z.G.Freykin (1977), M.Umarov (1964) va boshqalar	Janubiy Qizilqum rayonining bir qismi
2.	M. Qoriyev va A. Xisomov (1963)	Qashqadaryoning o`rta va quyi oqimidagi hudud
3.	H. H. Xojiboyev va boshqalar (1975)	Qarshi, Nishon, Jom, Qarnob, Kitob-Shahrisabz botig`i, Sunduqli cho`llar

4.	F.A.Mavlonov va boshqalar.(1974)	esa shimolda Qoratepa, Ziyoviddin-Zirabuloq, Qoratog` tog` etaklari, shimoli-sharqda —Shahrisabz meridiani bo`yicha janubda va janubi-sharqda Hisorning janubi-g`arbiy tarmoqlari va Oloviddin, Duldultov, Qoraqir va Saksondra balandliklari, janubi-g`arbda va g`arbda Turkmaniston bilan O`zbekiston o`rtasidagi chegara bo`yicha o`tkazilgan hudud
5.	I.A.Hasanov (1981)	Qashqadaryoning deltasi egallagan hudud
6.	S.I.Abdullayev, A.Mamatov (1992) va boshqalar	bir qator xususiyatlariga ko`ra Qarshi cho`li Qizilqum va Qoraqum cho`llarini bog‘lab turadigan oraliq polosa

*Jadval ma`lumotlar asosida R.Usmanova (2025) tomonidan tuzilgan.

I.Hasanov (1981), S.I.Abdullayev, A.Mamatov (1992) va boshqalar ta`kidlashicha, bir qator xususiyatlariga ko`ra Qarshi cho`li Qizilqum va Qoraqum cho`llarini bog‘lab turadigan oraliq polosani hosil qiladi. Ayni paytda bu hudud o`ziga xos individual xususiyatlarga ega bo`lganligi sababli tabiiy-geografik rayonlashtirishda Qashqadaryo tabiiy geografik okrugining mustaqil, alohida tabiiy-geografik rayoni sifatida qaralishi maqsadga muvofiqligini bayon etganlar. S.I.Abdullayev va A.Mamatov (1992)larning ta`kidlashicha, umuman Qarshi cho`lining hududi to`g‘risida hanuzgacha yakdillik yo`q [7; C.112., 4;94 b.].

Qarshi cho`lining shimolda Ziyoviddin-Zirabuloq tog‘larining etaklari, janubiy - sharqda Hisor tizmasi, G‘uzor, Dehqonobod past tog‘lari bilan g‘arbda va janubi-g‘arbda Sho`rsoy cho`kmasining shimoliy chekkasi va Devxona hamda Chilgumbaz platolarining etaklari bo`ylab o`tadi. Qarshi cho`lining Kitob-Shahrisabz tektonik botig‘i va G‘uzor adirlari bilan bo`lgan chegaralari ham relyefda yaqqol ifodalanmagan.

I.Hasanovning ta`kidlashicha, Qarshi qiya tekisligi asosan, Qashqadaryo havzasida joylashgan bo`lib, shimolda Zarafshon tizmasining etaklaridan boshlanadigan, sharqda Kitob-Shaxrisabz botig‘i, janubiy-sharqda Hisor tizmasi, G‘uzor, Dehqonobod past tog‘lari bilan chegaralanib, Janubiy-G‘arbda va G‘arbda Amudaryo o‘zaniga Sandiqli cho‘li orqali tutashadi.

Cho`lshunos olimlarning ma`lumotlarini tahlil qilish asosida, S.I.Abdullayev, Nazarov M.G.(2020) va A.Mamatov (1992)lar Qarshi cho`li geografik o`rniga ko`ra subtropik mintaqaning materik ichkarisidagi cho`llar zonasiga, gipsometrik sathiga ko`ra tekislik cho`llariga, iqlim sharoitlariga ko`ra arid (quruq) cho`llarga, litologik-edafik va landshaft xususiyatlariga ko`ra asosan gilli va qumli cho`llarga mansubdir, deb ta`kidlashgan [1;133 b., 4; 94 b.].

Qarshi cho‘li geomorfologik jihatdan rang-barang. Qarshi cho‘li yer yuzasi to`lqinsimon tekislikdan iborat bo`lib, relyefi 260-500 m lik gipsometrik sathlar orasida joylashgandir. Ba`zan relyefida qir va adirlar, gohida esa botiqlar uchrayydi. Qarshi cho‘lining katta qismini alyuvial-prolyuvial tekisliklar tashkil etadi. Jumladan, cho`l relyefning qadimiy tiplaridan qirlar Qo‘ng`irtog`da va Saksondara

hamda Oloviddintog` qirlarini tashkil etadi. Bu qirlar cho`lning eng baland nuqtalari hisoblanadi. Bundan tashqari Qo‘ng`irtog` (571 m), Kosontog` (540 m), Maymanoqtog` (502 m), lar 100-190 metr balandlikda tekislikka nisbatan ko`tarilib turadi. Qarshi cho‘lining janubi-sharqida Oloviddintog` (485 m), Do‘ltalitog` (514 m), Qorabuloq (500 m), Aland (400 m), To‘ng‘izsirt, Qoraqir qirlar sharq tomonidagi adirlar bilan tutashishshi natijasida cho`lning g`arbiy qismidagi qirlarni hosil qiladi. Ushbu qirlarning absolyut balandligi 400 metr atrofidadir. Olang, Setalantepa, Qorabuloq kabi qirlar yassi yuzali qirlar hisoblanadi. Qarshi cho‘lining allyuvial-prolyuvial tekisliklari orasida Charog`il, Dengizko‘l, SHo‘rsoy, Jalovash va boshqa cho‘kmalar mavjud. Muborak shahridan shimoldagi SHo‘rsoy, Sandiqli qum cho‘lining shimolidagi Dengizko‘l botiqlari botqoqlangan sho‘rhoklar sifatida ajralib turuvchi tekislik qismi bilan qo‘shilib ketgan.

Tashqi jarayonlarga bardoshli qattiq jinsli qatlamlari yer yuzasiga chiqqan joylarga relyefning strukturalari shakllari to‘g‘ri keladi. Jumladan, Qo‘ng‘irtog‘, Maymantog‘, Qoraxitoy kabi yakka qoldiq tog‘lardagi qoyalar shunday strukturali relyef shakllariga xosdir. Shunday jarayonlar natijasida yuzaga kelgan relyef shakllari ayniqsa, Qarshi magistral kanalidan Ko‘kdala massivining Jom cho‘liga tutash hududlarida uchraydi. Qir va yakka qoldiq tog‘ etaklarida joylashgan qiya tekisliklarda eroziya jarayonlari ancha keng tarqalganligini uchratish mumkin [5; 132-136 b., 6; C.1090-1095.].

Xulosa. Umuman olganda, relyef sharoitlariga ko‘ra Qarshi cho‘li hududining katta qismi yassi yoki biroz to‘lqinsimon bo‘lib, absolyut balandlik 260 m dan 500 m oralig`ida o‘zgarib boradi. Qarshi cho‘li relyefining ushbu xususiyatlari asosida Amudaryodan suv chiqarilib cho‘lda sug‘orma dehqonchilik maydonlarining kengaytirish uchun eng katta imkoniyatlarga ega bo‘lgan yangi yerlar o‘zlashtirish hisobiga yirik dehqonchilik rayoni shakllandi. Zero, Qarshi cho‘lining o‘zlashtirilishi munosabati bilan suv ta’minoti ancha yaxshilandi, sug`oriladigan yerlar maydonlari kengaytirildi. Ammo, ayrim hududlarda o‘simlik qoplamining degradatsiyasi, eroziya, sho‘rlanish, botqoqlanish, shamol eroziyasi kabi jarayonlar salbiy ta’siri ortmoqda. Bularni oldini olish tadbirlarini jadallashtirish zarur.

Foydalanilgan adabiyotlar ro`yxati.

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TABIIY GEOGRAFIK JARAYONLARNI SHAKLLANTIRUVCHI OMILLAR XUSUSIDA

Annotatsiya. *Maqolada tabiiy geografik jarayonlarni o`rganilishi, bu jarayonlarni tasnifi va shakllantiruvchi omillarning turlari, hamda o`ziga xos xususiyatlari ochib berilgan. Tabiiy geografik jarayonlarni yuzaga kelishida asosiy o`ringa ega bo`lgan jihatlari va bularni qishloq xo'jaligini rivojlantirishda hududlarda shakllanadigan jarayonlarining sabab va oqibatlari haqida bayon etilgan.*

Tayanch so'zlar. E*ndogen, ekzogen, karst, suffoziya, surilma, karst, nurash, glyatsial, eol.*

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AGAINST THE BACKGROUND OF FACTORS SHAPING NATURAL GEOGRAPHICAL PROCESSES

Abstract: *The article is devoted to the study of natural geographical processes, discloses the classification of these processes and the types of formative factors, as well as their specifics. The aspects of natural geographical processes that are of primary importance in their occurrence, as well as the causes and consequences of their processes, which are formed in the regions during the development of agriculture, are described.*

Keywords. *Endogenous, exogenous, karst, suffusion, sliding, karst, weathering, glacial, aeolian.*

Kirish. Tabiiy geografik jarayonlar - tabiatdagi modda va energiya o`zgarishlari, shakl o`zgarishlari, hamda rivojlanishiga sabab bo`luvchi barcha turdagi hodisalardir. Endogen va ekzogen kuchlar ta`sirida sodir bo`ladigan hodisalarning aksariyat qismi tabiiy geografik jarayonlar tarzida yuz beradi. Tabiiy geografik jarayonlar shakllanishi, miqyosi va tashqi tuzilishi jihatidan turlicha (zilzila, vulqon otilishi, karst, suffoziya, surilma, eroziya, jarlanish, botqoqlanish,

muzliklarning harakati tufayli yuzaga keladigan jarayonlar, sho`rlanish va b.)dir. Tabiiy geografik jarayonlar turlarining tabiatdagi tutgan o`rni ham bir - birlaridan farqlanadi.

Tabiiy geografik jarayonlar aholi hayotining xavfsizligi turli ijtimoiy muammolar, dehqonchilik, chorvachilik, o`rmonchilik, qurilish ishlari kabi masalalarda o`z aksini topadi. Tog` jinslarining emirilishi va yer po`stining tuzilishi yerning ichki qismi o`zgarishida ham aks etishi sir emas. Natijada yer po`stining yotish holati yer yuzasi relyef shakllanishi va ular bilan bog`liq ravishda turli muammolar yuzaga kelishi mumkin.

Har bir mamlakat itisodiyotini rivojida aholini iste`mol mahsulotlari bilan ta`minlash va yashash sharoitini yaxshilash maqsadida sanoat, qishloq xo`jaligi, o`rmonchilik, uy-joy qurilish ishlari kabilarni oqilona joylashtirish va rivojlantirish muhim ahamiyatga ega. Ushbu tarmoqlar takomillashtirishda har bir davlatning ishlab chiqarishi tabiiy sharoitga bog`liq bo`lganligidan, ayniqsa tabiiy geografik jarayonlarni keltirib chiqaruvchi omillarini o`rganish dolzarb masalalardan hisoblanadi.

Asosiy qism. Mamlakatimizda tabiiy geografik jarayonlarni o`rganish tarixida uzoq davrlarga borib taqaladi. Geograflar, tarixchilar, tabiatshunoslar, sayyohlar hamda mahalliy aholi tomonidan bitilgan qo`lyozmalarda tabiiy resurslardan foydalanish haqida bayon etilgan. Bu qo`lyozmalarning ba`zilarida o`z zamonalarida yuz bergan kuchli zilzilalar, vulqon otilishi, sel kelishi, bo`ronlar, qum bo`ronlari, ko`chkilar haqida ma`lumotlar uchratish mumkin. Ko`pincha ular bu tabiiy geografik jarayonlarning talofatlari xususida yozib qoldirganlar. Masalan, Buxoro shahrida 942 yilda bo`lib o`tgan 7 ballik zilzila haqida tarixchi olimlar tomonidan yozib qoldirilgan. Abu Rayxon Beruniyning "*Alosor al boqiya an alqurun alholiya*" (Qadimgi xalqlardan qolgan yodgorliklar) asarida ona shahri Kotni 993 yili degish yuvib ketganligi xususida yozib qoldirgan. Bundan tashqari Narshaxiy (X asr), Yoqut Xamaviy (XII asr), Zahiriddin Muhammad Bobur (XVI)larning asarlarida ham tabiiy geografik jarayonlar xususidagi ma`lumotlarni ayrim masalalarni bayon etish mobaynida keltirib o`tganlar.

1972 yildan R.A.Niyozov boshchiligida surilmalar "Yonbag`irlar va qiyaliklar turg`unligi" laboratoriyasida, A.P.Pushkorenko boshchiligida sel jarayonlari va suv omborlar qirg`og`ining abraziya tufayli qayta shakllanish muammolarini "Quyuq oqim 'choqlari" laboratoriyasida, prof. M.M.Mamatqulov boshchiligida "Karst va speleologiya" laboratoriyasida tadqiqotlar olib borilgan. M.M.Mamatqulov boshchiligidagi laboratoriyada K.Aripov va A.Nizomovlar tomonidan suffoziya jarayonlari o`rganildi. Keyingi davrlarda A.Rafiqov, X.Vaxobov, M.SH.Shermatov, A.N.Nig'matov kabi olimlar tomonidan tektonik gravitatsion, gayatsial, suffoziya, eroziya, akkumlyatsiya, eol kelib chiqishga ega bo`lgan tabiiy geografik jarayonlar yetarli ma`lumotlar asosida tadqiq etildi.

Tabiiy geografik jarayonlar deb, geografik qobiqda yoki uning ayrim qismlarida ro`y berib, unda miqdor hamda sifat o`zgarishlarga olib keluvch jarayonlarga aytiladi. Tabiiy geografik jarayonlar tabiatda modda va energiya o'zgarishlarini belgilab beruvchi hamda mayyan hudud landshaftlarining

rivojlanishiga sabab bo'luvchi barcha hodisalar hisoblanadi. Bularni landshaftlar komponentlarining o`zaro ta`siri va komponentlararo aloqalarda ro'y beruvchi jarayonlardan iboratdir. Aynan shu jarayonlarni keltirib chiqaruvchi omillarning muayyan nisbatida (atmosfera tsirkulyatsiyasi, namlikning aylanishi, releyf hosil bo'lishi, nurash, tuproq hosil bo'lishi, o'simlik va hayvonot dunyosining mavsumiy hamda asriy o'zgarishlari) ro`y beradi.

Tabiiy geografik jarayonlar tabiiy va sun'iy omillar ta'sirida shakllanadi va rivojlanib boradi. Tabiiy omillar esa ikki katta guruhga bo'linadi: Yer po`stida va yuza qismidagi barcha o`zgarishlarga sababchi bo`lgan ikkita: endogen va ekzogen kuchlar yoki jarayonlar bor. Endogen Yerning ichki energiyasi ta`sirida harakatga keltiruvchi kuch bo`lsa, Quyosh energiyasi ta`sirida esa yerning yuza qismidagi barcha o`zgarishlarni sababchisidir. Binobarin, endogen kuchlar bunyod etuvchi bo`lsa, ekzogen kuchlar esa barbod etuvchi xususiyatga ega.

Sun`iy omillar antropogen yoki texnogen omillardir. Antropogen omillarga insonning turli xil xo`jalik faoliyati kiritiladi. Inson tomonidan ishlab chiqarishning barcha tarmoqlarini tashkil etish maqsadida tabiatga bilvosita va bevosita ta`sir ko`rsatuvchi barcha faoliyatlar kiradi. Jumladan, shahar qurilishi, metallurgiya, tog`-kon sanoati, qishloq xo`jaligi, suv xo`jaligi, transport va boshqalar.

Tabiiy geografik jarayonlarni tadqiq etish landshaftlarni dinamik tuzilma sifatida o'rganishga, ularni muhofaza qilish va o'zgartirishning oqilona yo'llarini tanlashga imkon beradi. Geografik majmualararo hamda komponentlararo modda va energiya almashinuvini aniqlash ayniqsa katta nazariy ahamiyatga ega. Tabiiy geografik jarayonlar davriy va tartib asosida ketma ketlik bilan muntazam takrorlanib turadi. Masalan, fasllar (havo harorati, namligi, shamollar, yorug'lik) davomida almashinib turishi qonuniydir. Shu davriylikka mos ravishda tog' jinslarining yemirilishi, suv toshqinlari, sel, surilma va boshqalar ham muayyan tartibda takrorlanib turishi bejiz emas.

Hozirgi vaqtda inson yashab, to`xtovsiz munosabatda bo`lib kelayotgan tabiiy muhit uzoq geologik davrlar (4,5-4.7 mlrd. yil) mobaynida bir qancha omillarning birgalikda ta`sirida, ya`ni Quyosh nuri, Yerning massasi, gravitatsiya kuchi, ko`lami, aylanma harakatlar, havo va suv qobiqlarining vujudga kelishi va o`zgarishi, ekzogen jarayonlar ta`siri, organik dunyoning paydo bo`lishi va taraqqiyoti ta`sirida tarkib topgan. Tabiiy muhitning holati o`zaro ta`sir etib turuvchi ko`p omillarning murakkab majmuyida tarkib topgan tabiiy muvozanatga bog`liq [4; 169- 171 b.].

Tabiiy geografik jarayonlarni ilmiy tadqiq etishda tasniflash variantlari ham yuzaga kela boshladi. Jumladan, tabiiy geografik jarayonlarning ayrimlarini E.Q.Qodirov va boshqalar xavfli jarayonlar turkumiga kiritadi va uchta yirik guruhga ajratadi [2;112 b.]. Bundan tashqari M.M.Mamatqulov tomonidan ham tabiiy geografik jarayonlar O`zbekiston hududida uchraydiganlarini misol tariqasida tasniflangan. Natijada ushbu jarayonlarning etti turkumdan iborat guruhini shakllantirdi [1; 91 b.].

Tabiiy geografik jarayonlarning eng mukammal tasnifini prof.A.A.Rafiqov va H.Vaxobov tomonidan amalga oshirilgan bo`lib, bu yerda muallif tabiiy

geografik jarayonlarni ikki yirik guruhga ajratadi [3; 160 b.]. Birinchi guruh tabiiy omillar ta`sirida sodir bo`ladigan jarayonlar va ikkinchi guruh sun`iy omillar ta`sirida sodir bo`ladigan jarayonlardir. Birinchi guruh (yerning ichki (endogen) kuchlari ta`sirida sodir bo`ladigan jarayonlar)ni ham ikki guruhga ajratiladi. Shbu guruhga vulkanlar, zilzila, tog`larning ko`tarilishi, yer yuzasining cho`kishi kabi jarayonlar kiritilgan. Ikkinchi guruhga esa nurash, eroziya, surilmalar, muz va shamolning ishi kiritilgan.

Sun`iy omillar ta`sirida sodir bo`ladigan jarayonlarga esa sho`rlanish, ikkilamchi sho`rlanish, botqoqlanish, cho`llanish, agroeroziya, suv omborlar qirg`og`ining abraziyaga uchrashi va sun`iy eroziya kiritilgan (1-jadval).

1-jadval.

Tabiiy geografik jarayonlar tasnifi

(E.Q.Qodirov va b., M.M.Mamatqulov(2008), A.A.Rafiqov va b. (2010)bo`yicha)

	Mualliflar	
1.	E.Q.Qodirov va boshqalar	1.Yerning ichki kuchlariga bog`liq jarayonlar (tektonik harakatlar)
		2.Yerning tashqi kuchlariga bog`liq jarayonlar (tog` jinslari qatlamlaridagi surilmalar, sel hodisasini)
		3.Inson faoliyati bilan bog`liq jarayonlar
	M.M.Mamatqulov	1.Denudatsion kuchlar bilan bog`liq jarayonlar
		2.Gravitatsion kuchlar bilan bog`liq jarayonlar
		3.Yer usti oqar suvlari faoliyati bilan bog`liq tabiiy geografik jarayonlar
		4. Yer usti va yer osti suvlari, suvlari faoliyati bilan bog`liq jarayonlar
		5.Shamollar faoliyati bilan bog`liq jarayonlar
		6.Dengiz, ko`l, suv omborlari to`lqinlari bilan bog`liq tabiiy geografik jarayonlar
		7. Insonning xo`jalik faoliyati bilan bog`liq jarayonlar
3.	A.A.Rafiqov va b.	1.Tektonik xarakatlar tufayli yuzaga keluvchi tabiiy geografik jarayonlar
		2. Zilzilalar tufayli yuzaga keluvchi tabiiy geografik jarayonlar
		3. Vulqonlar otilishi tufayli yuzaga keluvchi tabiiy geografik jarayonlar
		4. Iqlim omillari ta`sirida yuzaga keluvchi tabiiy geografik jarayonlar
		5.Gidrologik va gidrogeologik oqim tufayli yuzaga keluvchi tabiiy geografik jarayonlar
		6.Gravitatsion kuch etakchiligida yuzaga keladigan tabiiy geografik jarayonlar
		7.Muzliklar ta`sirida yuzaga keladigan tabiiy geografik jarayonlar
		8.Antropogan ta`sir tufayli yuzaga keladigan tabiiy geografik jarayonlar

*Ma`lumotlar asosida R.Usmanova (2025) tomonidan tayyorlandi.

A.A. Rafiqov va boshqalar tomonidan tavsiya qilingan tasnifni A.Nizomov tomonidan tahlil qilingan va to`ldirishga harakat qilingan. Hozirgi zamonaviy texnologiyalar davrida ekologik muvozanatning buzilishi oqibatida tabiatga jiddiy zarar yekazilmoqda. Buning oqibatida landshaftlarning mahsuldorligi ham yildan–yilga pasayib bormoqda. Ayniqsa arid iqlimli hududlar landshaftlarining degradasiyasi tobora rivojlanib bormoqda. Bularning barchasi esa tabiat komponentlarida qashshoqlanishga va cho`llanish jarayonining rivojlanishiga olib keladi. Bunday jarayonlar ayniqsa, quruq iqlimli Qarshi cho`lida yaqqol namoyon bo`lmoqda.

Tabiiy omillar bevosita iqlimiy xususiyatlarga bog`liq bog`liqligidan Qarshi cho`lida issiq quruq va atmosfera yog`inlarining kamligi sababli sodir namoyon bo`lmoqda. Bunda yer osti suvlari sathining pasayishi, Qarshi cho`li atmosfera yog`inlari miqdorining kamayishi va bug`lanishning ortishi, yoz va qishda haroratlar amplitudasining kattalashishi, tuproq sho`rlanishining ortishi, davomli qurg`oqchil iqlimning ketma-ket kelishi tufayli tuproqning yuqori qatlamida namlik zahirasining kamayishi va boshqalar kuzatiladi [6; 98-101 б.].

Bundan tashqari dehqonchilikda ekin maydonlaridan noto`g`ri foydalanish tufayli agroyeroziya kabi suv va shamol ta`sirida inson omilining aralashuvi tufayli yuzaga keladi. Tabiiy jarayonlar natijasida o`simliklarning nobud bo`lishi, ularning ayrim turlarining yo`qolishi va natijada yaylov mahsuldorligining kamayishi kuzatiladi. Qarshi cho`lida sug`orilib dehqonchilik qilinadigan yerlarida qishloq xo`jaligi ishlab chiqarishiga tabiiy geografik jarayonlardan suv eroziyasi, shamol eroziyasi, gravitatsion jarayonlar, sel hodisalari, loyqa bosishi, botqoqlanish, sho`r bosish, qatqaloq hosil bo`lishi hodisalari eng ko`p salbiy ta`sir ko`rsatadi [5; 6; 98-101 б.].

Xulosa. Tabiatdan foydalanishda, ya`ni yangi yerlarni o`zlashtirishda, ishlab chiqarish obyektlarini qurishda, qurg`oqchil yerlarni sug`orishda va boshqalarda tabiiy omillar nisbati ular o`rtasidagi muvozanat buzilishini oldini olish zarur bo`ladi. Shuning uchun tabiatga har qanday ta`sir ko`rsatishdan oldin tabiiy geografik jarayonlarning o`ziga xos xususiyatlarini va shakllantiruvchi barcha omillarni tadqiq qilish zarur. Ayniqsa tabiat muvozanatiga ta`sir ko`rsatuvchi jarayonlarni va ushbu ta`sirlardan keyingi o`zgarishlar bo`lishi mumkinligini hisobga olmoq kerak.

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AVTOMATLASHTIRILGAN KO‘P MEZONLI TASHXISLASH AXBOROT TIZIMI UCHUN AXBOROT MODELI

Annotatsiya: *Ushbu maqolada gastroenterologik kasalliklarni ko‘p mezonli tahlil asosida aniqlash imkonini beruvchi axborot modelini ishlab chiqish masalasi ko‘rib chiqiladi. Model bemor gastroenterologik signallarini raqamli shaklda yig‘ish, ularni dastlabki qayta ishlash, filtrlash va diagnostik mezonlar bilan solishtirish orqali tahlil qilish jarayonlarini o‘z ichiga oladi. Axborot modelining tuzilmasi kasalliklarni aniqlashda qo‘llaniladigan asosiy parametrlar va ular o‘rtasidagi mantiqiy bog‘liqliklarni aks ettiradi.*

Kalit so‘zlar: *Gastroenterologik kasalliklar, ko‘p mezonli tahlil, axborot modeli, raqamli signal, tashxislash mezonlari, ma’lumotlar bazasi, instrumental tekshiruv, klinik simptomlar, avtomatlashtirilgan tizim.*

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INFORMATION MODEL FOR AUTOMATED MULTI-CRITERION DIAGNOSTIC INFORMATION SYSTEM

Abstract: *This article considers the development of an information model that allows for the identification of gastroenterological diseases based on multi-criteria analysis. The model includes the processes of collecting patient gastroenterological*

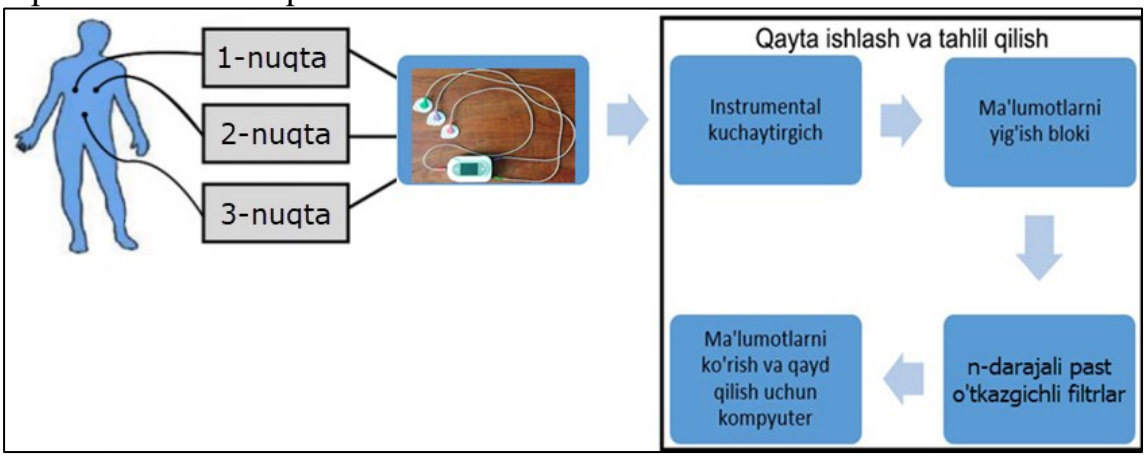
signals in digital form, their initial processing, filtering and analysis by comparing them with diagnostic criteria. The structure of the information model reflects the main parameters used in the identification of diseases and the logical relationships between them.

Keywords: *Gastroenterological diseases, multi-criteria analysis, information model, digital signal, diagnostic criteria, database, instrumental examination, clinical symptoms, automated system.*

Zamonaviy tibbiyotda kasalliklarni erta aniqlash va to‘g‘ri tashxis qo‘yishning ahamiyati beqiyosdir. Gastroenterologik kasalliklar, ayniqsa, turli xil klinik belgilar va murakkab tashxislash mezonlari bilan ajralib turadi. Bu jarayonda an’anaviy usullarning o‘rnini avtomatlashtirilgan, raqamli tahlilga asoslangan tizimlar egallamoqda. Ushbu ilmiy tadqiqot ishi, gastroenterologik tashxislashni avtomatlashtirishga mo‘ljallangan ko‘p mezonli axborot modeli va tizimini yaratishga qaratilgan bo‘lib, klinik, laborator, instrumental va raqamli signal ma’lumotlarini integratsiyalash orqali qaror qabul qilish jarayonini soddalashtirishni maqsad qiladi.

Axborot modeli - bu ob’ekt , jarayon yoki hodisani, shuningdek ob’ektlar va atrofdagi dunyo o‘rtasidagi munosabatlarni aks ettiruvchi parametrlar va ular o‘rtasidagi munosabatlar to‘plami. Model parametrlari muayyan muammolarni hal qilish uchun ob’ekt yoki jarayonning eng muhim xususiyatlarini aks ettiradigan tarzda tanlanadi. Jismoniy modellardan farqli o‘laroq, axborot modellari asl ob’ektning aniq nusxalari bo‘lishi shart emas. Ularning maqsadi - mavjud muammoni hal qilish uchun yetarli ma’lumot berishdir.

Axborot modeli turli usullarda, jumladan, jadvallar, grafiklar, diagrammalar va boshqa formatlarda taqdim etilishi mumkin.



1-rasm. Elektrogastrogramma signalini yozib olish ketma-ketligi

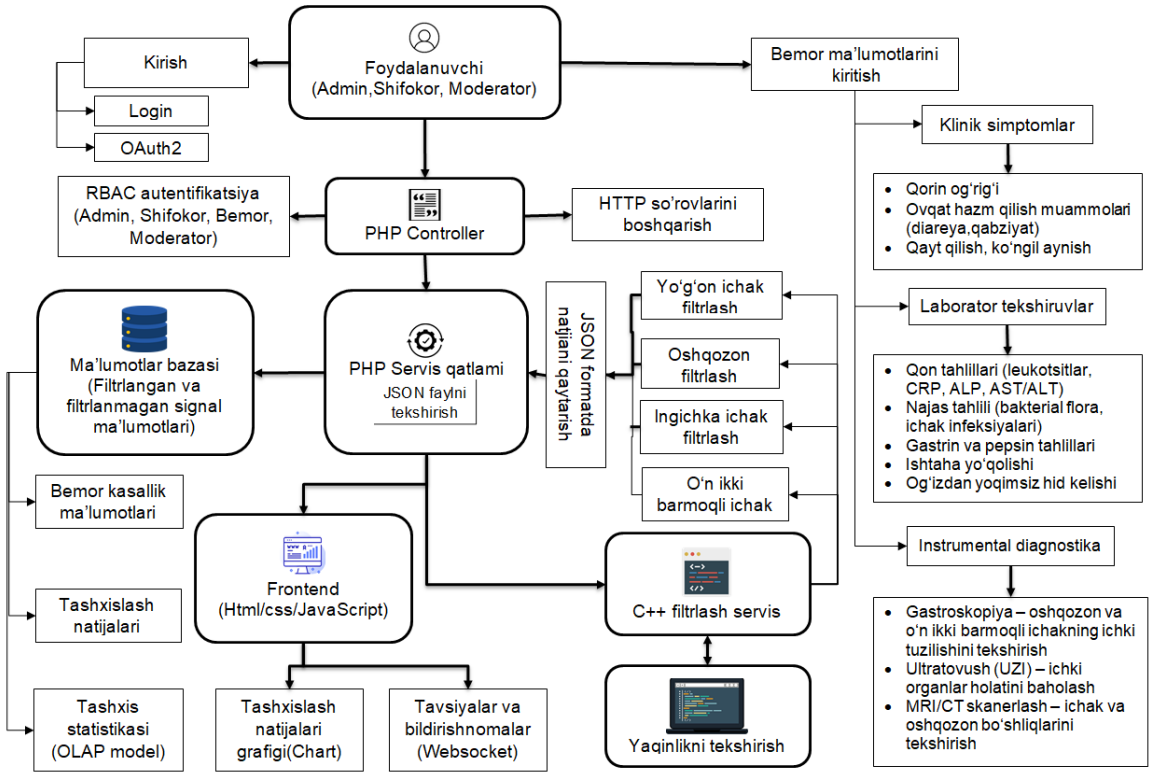
Quyida, 2-rasmda keltirilgan axborot modeli gastroenterologik kasalliklarni aniqlashga qaratilgan. Model bemordan olingan signal ma’lumotlarini kiritish, ushbu signalni filtrlash, natijalarni tahlil qilish va foydalanuvchiga yetkazish jarayonlarini matematik hamda algoritmik tahlil bilan tasvirlaydi. Dastlab ilmiy tadqiqot ishining ob’ekti hisoblangan elektrogastrogramma signalini yozib olish ketma-ketligini ko‘rib chiqish lozim bo‘ladi(1-rasm)[2; 4].

Signalni yig‘ish jarayoni, bunda kirish ma’lumotlari, ya’ni bemor gastroenterologik signal ma’lumotlari sensor-datchik orqali uzatiladi. Chiqish ma’lumotlari esa olingan signal — S(t) bo‘ladi.

2-rasmda keltirilgan axborot modelining ba’zi asosiy komponentalari.

Axborot modelining asosiy komponentlaridan biri bu ma’lumotlar bazasi. Kasalliklarni diagnostika qilish uchun ma’lumotlar MySQL kabi ma’lumotlar bazalarida saqlanadi va u bir qancha: bemor, signallar, ekspert shifokorlar, tashxislar va h.k. kabi zaruriy jadvallardan iborat bo‘ladi[1; 3; 5].

Keyingi asosiy komponentalardan biri bu tashxislash mezonlari. Gastroenterologik kasalliklar ko‘p mezonli tahlil orqali aniqlanadi. Asosiy mezonlar quyidagilar:



2-rasm. Gastroenterologik kasalliklarni ko‘p mezonli tashxislash jarayonlari uchun axborot modeli

Klinik simptomlar:

- ❖ Qorin og‘rig‘i;
- ❖ Ovqat hazm qilish muammolari (diareya, qabziyat);
- ❖ Qayt qilish, ko‘ngil aynish;
- ❖ Ishtaha yo‘qolishi;
- ❖ Og‘izdan yoqimsiz hid kelishi.

Laborator tekshiruvlar:

- ❖ Qon tahlillari (leukotsitlar, CRP, ALP, AST/ALT);
- ❖ Najas tahlili (acterial flora, ichak infeksiyalari);
- ❖ Gastrin va pepsin tahlillari.

Instrumental diagnostika:

- ❖ Gastroskopiya – oshqozon va o‘n ikki barmoqli ichakning ichki tuzilishini tekshirish;
- ❖ Ultratovush (UZI) – ichki organlar holatini baholash;
- ❖ MRI/CT skanerlash – ichak va oshqozon bo‘shliqlarini tekshirish.

C++ Filtrlash servis komponentasi. Bemorning biofizik signallarini filtrlashni amalga oshiradi. Bunda Butterworth Bandpass filtri qo‘llanilgan. Signal Butterworth bandpass filtri yordamida optimal chastota diapazonida filtrlanadi[1;3]:

$$H(f) = \frac{1}{\sqrt{1 + (\frac{f}{f_c})^{2n}}} \quad (1)$$

Bu yerda, $H(f)$ – filtrning chastotaga bog‘liq kuchaytirish funksiyasi (transfer function).

f – kirish signalining chastotasi (Hz).

f_c – kesish chastotasi, ya’ni signal shu chastotadan yuqori yoki past bo‘lsa, susaytirish boshlanadi.

n – filtrning tartibi (order), ya’ni filtrning keskinligi. Yuqori n qiymati filtrni aniqroq qiladi, lekin hisoblash jarayonini murakkablashtiradi.

Keyingi komponenta yaqinlikni tekshirish komponentasi. Bunda Kosinus O‘xshashligi usulidan foydalanilgan[1;2;4].

$$\cos(\theta) = \frac{A \cdot B}{||A||||B||} \quad (2)$$

Bu yerda, A – birinchi signal yoki vektor (filtrlangan bemor signali).

B – ikkinchi signal yoki vektor (ma’lumotlar bazasidagi diagnostika signali).

$A \cdot B$ – ikkita signal vektorining skalyar ko‘paytmasi.

$\|A\|$ – A signal vektorining uzunligi (Evklid normasi).

$\|B\|$ – B signal vektorining uzunligi.

θ – Ikkita vektor orasidagi burchak.

Filtrlangan signal ma’lumotlar bazasidagi tashxislar bilan solishtiriladi. Kosinus o‘xshashligi yordamida bemorga mos keluvchi kasallik aniqlanadi:

Bu keltirilgan mezonlar tashxislash jarayonlarida asosiy o‘rinni egallaydi. Chunki dastlabki ma’lumotlarni yig‘ish jarayonida bemor ro‘yxatdan o‘tkaziladi va bemorning shaxsiy ma’lumotlari bilan birga klinik simptomlar anketa shaklida to‘planadi, shu bilan bir qatorda laborator va instrumental tekshiruv natijalari ham bazaga kiritiladi.

Axborot modelining ishlash tamoyili:

- ✓ Bemor kasallik simptomlari kiritiladi;
- ✓ Tibbiy testlar va diagnostika natijalari tizimga yuklanadi;
- ✓ Filtrlash va tahlil jarayonlari amalga oshiriladi;
- ✓ Bemorga eng mos tashxis va tavsiyalar shakllantiriladi;
- ✓ Shifokor natijani tekshirib, yakuniy tashxisni tasdiqlaydi.

O‘zaro yaqinlashish algoritmi yordamida hosil qilingan bemor filtrlangan signal ma’lumotlari grafiklari. Bu bosqichda bemorning kasalliklarga tegishlilik

darajalari asosida o‘zaro yaqinlashish algoritmi yordamida filtrlangan signal ma’lumotlari olinadi va ular grafik ko‘rinishda aks ettiriladi.

Ushbu jarayon bemorning simptomlari va ularning kasalliklar bilan bog‘liqligini vizual tarzda taqdim etadi.

Ekrandagi grafik jarayoni natijasida ma’lumotlar grafik ko‘rinishda aks ettiriladi.

Maqbul tashxisni tanlash.

Ekspert: Ushbu jarayonda aks ettirilgan grafik va tizim tomonidan qo‘yilgan boshlang‘ich tashxis asosida mutaxassis yoki ekspert bemorning kasalliklarini aniqlaydi va yakuniy ma’qul tashxisni tanlaydi.

Chiqish: Tanlangan tashxis natija sifatida tizimdan chiqariladi.

Qo‘shimcha elementlar:

Dasturiy ta’minot: Bu texnologik jihatni ko‘rsatadi, ya’ni dasturiy vositalar yordamida hisob-kitoblar amalga oshiriladi.

Uskunalar ta’minoti: Jarayonda ishlatiladigan apparat yoki texnik vositalar orqali ma’lumotlar o‘lchanadi yoki qayta ishlanadi.

Yuqoridagilardan kelib chiqiladigan bo‘lsa bu chizma bemorning simptomlari asosida tashxislash jarayonining texnologik va algoritmik bosqichlarini aks ettiradi. Filtrlash algoritmi, grafik tahlil, va ekspert yordami orqali oxirgi tashxis tanlanadi. Jarayonni avtomatlashtirish va tezkor qaror qabul qilish maqsadida dasturiy va apparat ta’minoti ishlatiladi[2; 3; 6].

Taklif etilgan avtomatlashtirilgan ko‘p mezonli axborot modeli va tizimi orqali gastroenterologik kasalliklarni tashxislashning yangi bosqichiga o‘tiladi. Klinik, laborator, instrumental va raqamli signal ma’lumotlari integratsiyasi asosida shifokorlarga tezkor, aniq va asosli qaror qabul qilish imkoniyati yaratiladi. Tizim tibbiy texnologiyalarni raqamlashtirish va tahliliy yondashuvni joriy qilish borasida katta ilmiy-amaliy ahamiyat kasb etadi.

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SAMPLING METHODS FOR DETERMINING PHYSICAL AND MECHANICAL PROPERTIES OF COMPOSITE ASPHALT CONCRETE MATERIALS

Abstract. *Nowadays, great attention is paid to automobile roads in the world, through which 90% of the national economy's cargo and more than 95% of the volume of passengers transported by all types of transport are delivered to their destinations. In this regard, the development of transport communications by improving the quality of roads and the technical condition of transport networks, as well as the creation of composite materials that are elastic, resistant to deformation, displacement and cracking, and that meet modern requirements, are of particular importance.*

Keywords. *Physico-mechanical property, composition, cylinder, pebble stone, hydraulic press.*

Introduction. After determining the physicochemical properties of asphalt concrete and aggregates, the mixtures are compacted in steel molds and samples are taken.

The molds for preparing cylindrical samples are made of steel cylinders with a diameter of 71.4 or 50.5 mm , which are made in three interconnected cylindrical molds.

To determine the physical and mechanical properties of the alloy, samples in a cylindrical mold are prepared by compacting the alloy prepared under laboratory conditions, as well as from test alloys obtained in a mixing plant or at the work site . It is not allowed to re-mold laboratory samples . The obtained samples are heated in a sand bath or using a thermostat to a temperature of 140 - 160 ^{0}C , then crushed with a spoon or spatula.

The compaction of the sample taken from the mixture containing up to 50% limestone in terms of density is carried out by compaction in a hydraulic pipe at a pressure of (40.0 ± 0.5) MPa . It is necessary to provide a double loading during compaction, and for this purpose, the pressure is transferred to the compaction layer with two input plates , which are quickly closed and compacted in the mold .

The mold is heated up to 90-100°C when making a sample from the hot melt. The mold is not pre-heated when making a sample from a hot melt.

Preparation of the test sample. The lower part is filled with the approximate amount of the mold mixture to which the insert is attached.

The mixture in the mold is leveled with a spatula or knife and placed on the upper insert. To compact the mixture, the mold is placed on the lower plate of the press together with the mixture. In this case, the lower insert should protrude from

the mold by 1.5-2.0 cm. The upper plate of the press is pressed together with the upper insert. The compacted mixture is subjected to a pressure of up to 40 MPa for 5-10 seconds, after (3.0 ± 0.1) minutes it is unloaded, the sample is removed from the mold using a pressing device, and its height is measured with a caliper with an error of 0.1 mm according to the GOST166-2009 standard. To compact a sample taken from a hot mix with a fine aggregate content of more than 50% by weight, it is first compacted by vibration and then compacted using a press.

90-100 ^{0} C, the mold is filled with a coating and placed on the vibration area and the necessary equipment (contraction equipment for fastening selected by closing the vibpo field) is fixed with. The bran should be 2-2.5 cm higher than the mold. The coating is pressed in the mold at (2900 ± 100) pressure, (0.40 ± 0.05) mm amplitude and (30 ± 5) kPa vertical load on the coating (3.0 ± 0.1) minutes.

The mold sample is removed from the vibration area and placed on a ppecc plate for densification at a pressure of (20.0 ± 0.5) MPa and held at this pressure for 3 minutes. The final load is taken and the sample is removed from the mold in the closing device.

The compression test is carried out in cylindrical molds during the preparation of the alloy to be tested.

The mold, heated to (80±2)°C, is installed on two inserts, the lower insert is inserted into the mold with an eca ctepjen. The top layer is glued to the mold in such a way that the step that is attached to the layer is firmly attached to the top layer of the layer. The mold is held and the load is placed on the top of the load, the mass of the load should be equal to (20.0 ± 0.5) kg, which ensures that the load is 0.05 MPa. The mixture is held in the loading position for (3.0 ± 0.1) minutes, then the load is removed, the mold is lifted and the sample is removed. Then the upper insert is removed from the sample, the sample is carefully removed from the container using only two hands and taken to a storage place, where it is kept for at least 4 hours at an air temperature of (20± 5) °C.

The agar sample is immediately flattened after compaction, and then stored in the mold for at least 4 hours at (20 ± 5) °C after loading the next sample.

The height of the sample should be (60±1) mm. The method for checking the amount of alloy in the sample preparation is applied .

Sampling, preparation of a composite sample, preparation of a mastic sample or film for testing are carried out in accordance with the regulatory documents issued for specific types of mastics.

5) K (20 ±5 ^{o} C) without any other multi-layered composition .±

The time to prepare the composition or sample before testing can be increased in myopic documentation.

The size of the sample for testing should not be less than three parts, depending on the myopia document.

In order to determine the quality coefficient of the composition material for the map, the approximate value of the result of the sample survey is obtained.

To assess the quality of the packaged petroleum bitumen for packaging, a portion of 2% of the total volume is opened. Each batch is selected with a weight of about 1 kg. It is then sent to the packaging organization's laboratory for testing. In the laboratory, the sample is divided into two parts: one part is used for testing, and the second part is stored for 2 months with the possibility of re-testing .

Before determining the physicochemical properties of the composition mastics, it is necessary to dewater the petroleum bitumen. A sample of petroleum bitumen is taken and placed in a special container, the special container is placed in a sand bath in a drying drum, and solid and semi-solid bitumens are heated to a temperature of no more than 120-180 ^{0} C, depending on their viscosity.

5 to 35% goccipol cmola, 5 to 30% pezina powder, basalt fiber, slaked lime, minepal activated filler 1 to 6% are added to the epigan binder of Co'ngpa bitumlap. it is boiled until With this, the bipga hapopat is kept at 110-210 ^{o} C for 2 to 6 coats. After 4-6 coats are applied, the composite is prepared to conduct a chemical and physical examination, to determine its physical-mechanical and other characteristics.

To assess the quality of composite materials, the laboratory determines the softening and cracking properties of the material, its brittleness, viscosity, elongation, and the amount of water-soluble compounds.

Conclusion. Based on the above information, it was scientifically proven that the purpose of this research work is to develop elastic-deformation-resistant composite asphalt concrete materials for use in paving highways in hot climates and mountainous conditions, based on physicochemically activated organomineral ingredients of local and secondary raw materials.

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METHODS OF COMPOSITE ASPHALT CONCRETE MATERIALS FOR ROAD SURFACES

Abstract. *Despite the fact that Uzbekistan has sufficient raw material resources after gaining independence, scientific research has been conducted to obtain elastic-deformation-slip-resistant asphalt concrete materials, improve the condition of automobile roads and develop road transport infrastructure, increase the quality and strength of asphalt concrete materials, and increase the competitiveness of products manufactured using them, and certain results have been achieved. In this regard, the production of elastic-deformation-slip-resistant composite asphalt concrete materials for road pavements by physicochemical modification of organomineral components based on local and secondary raw materials is of great importance.*

Keywords. *Composition, Asphaltobeton, crushed stone, sand, mineral powders, specific gravity.*

Introduction. When calculating the composition of the mineral part of asphalt concrete, the weight ratios between crushed stone, sand and mineral powders are calculated based on the composition of their aggregates and the applicable purity standards, as derived from the aggregate composition. In cases where the difference in specific gravity is 0.20 g/cm3 or more, corrections are made to the coefficients d 1 /d 0 by increasing the amount of heavy and reducing the amount of light minerals, where d $_0$ is the specific gravity of the mineral material with the highest specific gravity in the mineral aggregate (gravel, sand); d $_1$ - d $_0$ 0.20 g/cm ^{3} and more is the compressive strength of the mineral material.

For example, the specific gravity of the material (gravel or sand) is d $_0$ = 2.7, and the specific gravity of the mineral powder is d $_1$ = 2.9. If the calculation requires 10% mineral powder, we take its actual density as (2.9/2.7)10 = 10.7%. Thus, the amount of the material or another material close to it in specific gravity is reduced by 0.7%.

Based on the actual porosity of the asphalt concrete sample obtained in the laboratory and the estimated residual porosity of the asphalt concrete after the application. The maximum amount of bitumen in asphalt concrete is calculated.

The bulk density of the sample and the specific gravity of the mineral fraction are determined, and the required amount of bitumen is calculated using the following formula:

$$Б = \frac{(v^0_{пор} - v_{пор})\,\gamma_y}{\gamma_0} (1)$$

in this case, $\boldsymbol{v}^{\,0}_{\,pop}$ is the porosity of the tested minepal layer, %;

e_{pop} - residual porosity of asphalt concrete at +20 °C, %;

g_u - compressive strength of bitumen at +20 °C temperature, g/cm ^{3};

g_0 is the volume deviation of the tested sample of asphalt concrete, g/cm ^{3}.

The bitumen scale is measured, the final coating is prepared and three samples are formed and the residual porosity is determined. As soon as it reaches the flaky (for asphalt concrete of this type and type) scale, one more bitumen coating is applied on the same scale. pattern is formed.

The approximate amount of bitumen in the asphalt concrete mixture was determined by pouring.

When the bitumen content is 5.2% (100% of the mineral fraction), the bulk density of the asphalt concrete sample taken for testing is 2.32 g/cm ^{3} ha, the specific gravity of the mineral fraction is 1.00 g/cm ^{3} ha, and the residual porosity of the asphalt concrete is 4.0%.

In this case:

g_0 = ***2,*** 32×100/(100+5.2) = 2.20 g/cm ^{3}; (2)

$$Б = \frac{(17,9-4,0)x1,0}{220} = 6,3\ \%(3)$$

$$v_{пор}^{0} = (1 - \frac{2,20}{2,68}).\ 100=17.9\ \%(4)$$

For the study, three samples with a final bitumen content of 6.3% were formed. It is recommended to prepare a mixture with the minimum and maximum permissible residual porosity when mixing the composition and test the first sample for strength at +50 °C, and the second sample for water resistance only after long-term water saturation (within 15 days). According to the results of this test, the limit of the bitumen layer composition in hot and warm asphalt-concrete mixture is finally determined.

Conclusion. During the investigation of the asphalt concrete minepal layer, it was found that the hardness of the sand, sand and minepal powder was increased.

Physico-chemical analysis and mechanical activation method of the organic mineral ingredient in local and secondary raw materials are described, and the method of determining the components of the composition is described. was brought.

A method for obtaining the composition of asphalt concrete and determining its physical-mechanical and operational characteristics was proposed.

A mathematical-tactical approach was used to process the results of the experimental research.

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MATHEMATICAL MODEL FOR CONTROLING AND MONITORING OF THE MICROCLIMATE IN CLASSROOMS

Annotation: *This article presents an overview and analysis of mathematical models used for controlling and monitoring the microclimate in educational environments. It emphasizes the importance of maintaining optimal thermal and air quality conditions in classrooms to support students' health, comfort, and academic performance. The study reviews existing systems and introduces models such as PD, PS, TS, and adaptive models that account for dynamic changes in indoor and outdoor climates. A three-level architecture for automated microclimate control systems is proposed, incorporating sensor networks, data processing units, and visualization interfaces. The relevance of the study lies in the need for energy-efficient, human-centered solutions for indoor environmental control in educational settings.*

Keywords: *Microclimate control, thermal comfort, mathematical modeling, indoor environment, PD model, PS model, TS model, adaptive models, classroom climate, sensor systems, automated regulation, energy efficiency.*

The support of microclimate parameters in office or educational spaces has a significant impact on human health, productivity, quality of life, and energy consumption during maintenance. Among the factors of the indoor environment, a set of microclimatic conditions is distinguished, which includes thermal conditions and the composition of the indoor air [1].

To meet microclimate requirements with low energy consumption, it is often necessary to control and manage many microclimate parameters: air temperature and humidity, CO_2 content, using control actions such as air heating (heating), ventilation, humidification, carbon dioxide enrichment, and so on. Due to the high nonlinearity of the physical processes in work and living spaces, classical methods of control theory are either unsuitable for solving the problem of designing microclimate control regulators or are difficult to solve [2,3].

Since educational spaces also have requirements for maintaining the microclimate and are places where it is important to maintain temperature, humidity, cleanliness, and air freshness, students and teachers, spending most of

their time in classrooms, are more sensitive to deviations in microclimate parameters [4].

A number of tasks must be solved when creating an automated microclimate control system [5-7]:

- **Analysis of existing parameters** of technological regimes in educational or office spaces, as well as the applied microclimate control and management systems and their functional capabilities;
- **Development of a mathematical model** for spatial control of temperature and humidity parameters in the environment;
- **Development of a model and methodology** for the rational placement of identified sensors in the space;
- **Development of algorithms** for the operation of automated systems based on identified sensors, with the goal of improving regulation quality by increasing the accuracy and reliability of the information;
- **Conducting experimental research** to verify the correctness of the developed theoretical provisions for creating the automated control system, as well as its functionality and effectiveness.

The relevance of the topic of microclimate control and monitoring in office and educational spaces is linked to the problem of creating comfortable or optimal conditions for work and study. Given that there is insufficient attention paid to this issue in the literature, or the focus is mainly on microclimate management in agricultural facilities, creating comfortable conditions for people remains an important task for maintaining health [1]. The types of mathematical modeling used in this field pursue either research or computational goals [8].

Three types of modeling are typically used for simulating microclimate formation processes:

- **Mathematical modeling**, based on solving systems of differential or algebraic equations that describe the thermal, air, humidity, and gas conditions in the space.
- **Physical modeling** in natural conditions or on geometrically similar models, where physical processes are transferred using scaling dependencies.
- **Analog modeling** - a type of physical modeling in which real processes are replaced by others that have formally analogous mathematical descriptions [8].

The microclimate control and monitoring system is based on robotic technologies (Arduino, Raspberry Pi). To create an effective microclimate control system, it is necessary to consider a number of factors and parameters outlined above. In the literature [9], the creation of a smart microclimate control and monitoring system with supply and exhaust ventilation is proposed, based on the use of a breather (air exchange unit). However, this system is not designed for large-volume spaces.

The most relevant system for solving the given tasks is described in [10-12], which has a three-level structure:

1. **The first level** consists of sensors or recorders designed to measure the relative humidity and/or temperature of the surrounding environment.

2. **The second level** consists of microclimate monitoring devices intended for centralized collection, control, storage, and processing of the information coming from the sensors.

3. **The third, upper level** contains devices that display graphical information, mnemonic diagrams for monitoring the parameters.

Types of Mathematical Modeling

- **Model PD**

The PD model predicts the percentage of dissatisfied individuals due to undesirable local cooling (draft). The input data includes air temperature, air velocity, and the turbulence intensity of the airflow[11].

The model equation can be represented as:

$$PD = 3.413(34 - T_a) * (v_a - 0.05)^{0.622} + 0.369 v_a T_u (34 - T_a) * (v_a - 0.05)^{0.622}$$

where T_u is the turbulence intensity, expressed as a percentage (0% indicates laminar flow; 100% means that the root mean square deviation of the airflow velocity over a given period is of the same order of magnitude as the average air velocity); v_a is the air velocity (m/s); T_a is the air temperature (°C).

The equation was derived during a study in which 100 people were exposed to various combinations of air temperature and airflow velocity with different levels of turbulence intensity. For each combination of conditions, the participants were asked whether they felt a draft. Thus, PD represents the percentage of people who reported feeling a draft and, therefore, were dissatisfied with the microclimatic conditions[13].

- **Model PS**

The model is based on the selection of a comfortable air velocity level. The model equation predicts the air velocity that a person would choose at a given air temperature[11].

The model equation can be represented as:

$$PS = 1.13\sqrt{T_{op}} - 0.24 T_{op} + 2.7\sqrt{v_a} - 0.99 v_a$$

where T_{op} is the operative temperature (°C); v_a is the air velocity (m/s).

The equation was obtained from a study involving 50 participants. PS represents the percentage of people who selected a specific air velocity at a given temperature[13].

- **Model TS**

The model equation represents the prediction of thermal sensation using a linear function of air temperature and the partial pressure of water vapor [12]. The equation is written as:

$$TS = 0.24T_a + 0.248p - 6.475$$

where T_a is the air temperature (°C); p is the partial pressure of water vapor (kPa).

- **Adaptive models**

Adaptive models [13-15] allow for the calculation of comfortable conditions in a room, taking into account changes in the external climate. The equations can be applied to both rooms with a microclimate control system and those without it:

$$T_n = 23.9 + \frac{0.295(T_{mmo} - 22)}{e - \left[\frac{(T_{mmo} - 22)}{24\sqrt{2}}\right]^2}$$

$$T_n = 9.22 + 0.48T_a + 0.14T_{mmo} \; T_n = 9.22 + 0.48T_a + 0.14T_{mmo}$$

where T_n is the neutral temperature; T_a is the air temperature; T_{mmo} is the average monthly outdoor air temperature.

Conclusion

Maintaining a stable and comfortable microclimate in classrooms is crucial for the well-being and performance of students and teachers. The presented models—PD, PS, TS, and adaptive—demonstrate the potential of mathematical approaches to accurately predict thermal comfort and dissatisfaction under varying conditions. Implementing such models within automated control systems can improve regulation accuracy and optimize energy consumption. The proposed multi-level system structure, based on sensor technologies and intelligent algorithms, offers a practical and scalable solution for modern educational facilities. Further research should focus on integrating these models with real-time data and machine learning techniques to enhance adaptability and predictive capabilities.

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THE ROLE OF DIGITAL TECHNOLOGIES IN THE ORGANIZATION OF DISTANCE EDUCATION

Abstract: *In the article, the main goal of fundamental reforms in the field of education today is to impart knowledge based on world standards and to introduce modern educational methods in the training of competitive personnel. Therefore, distance learning has become an integral part of the modern and increasingly developing education system. The distance education system is a system updated and reworked with today's modern knowledge, in which special attention is paid to the theoretical and practical aspects of science.*

Key words: *distance education, information technology, digital technology, video lesson, online lecture, electronic education.*

Distance education is an independent form of education, and information technology is the main tool of this education system. Distance education is an educational complex based on the exchange of educational information at a distance, the use of a special educational environment for the teacher, and the means of providing educational services to all levels of learners and foreign students. Distance education has its own characteristics, pedagogical system, purpose and necessity [1].

Digital technologies, information and communication technologies that are growing every hour, computer programs and programming languages, mathematical models and other data-based learning provide opportunities for good temporal organization. Digital technologies play an important role in the growth and development of distance education and play a role in the following key areas[2]:

1. Online preparation and distribution of teaching materials: Digital technologies make it easier for teachers and textbook authors to prepare and distribute teaching materials online. It allows sharing between teachers and learners through computers.

2. Interactive educational programs and tasks: Digital technologies are used to create interactive educational programs and tasks. Students learn and master skills easily through these tools.

3. Video lessons and online lectures: Video lessons and online lectures turn out to be a convenient and effective part of distance education. Students can see the teachers and their lectures on their own time and help them to understand the material better.

4. Opportunity to learn at random times: Digital technologies allow students to learn at random times. This makes it easier for students to adapt and master their learning at their own time.

5. Monitoring and evaluation: Digital technologies provide convenient tools for monitoring learning processes and evaluating students. This helps to evaluate the learning outcomes and adapt the education to the new routes.

6. Special programs and platforms: Special educational programs and platforms make distance learning easier and more effective through programs designed for teachers and students.

7.Information Security: Digital technologies provide tools that are essential for keeping students' personal information safe and ensuring information security on learning platforms.

This, digital technologies show themselves in the implementation of distance education and increase student learning. Digital technologies facilitate learning and make the learning process of students more effective.

There are several positive aspects of the distance learning method[3]:

1. Creative teaching environment. Based on the created methods, the teacher imparts knowledge, and the student reads only the given material during the lesson. Based on the proposed distance learning, the students themselves search for the necessary information from a large number of electronic information resources on the basis of computer tools and, of course, share the results of their conclusions with others through various public electronic networks. This helps students to learn independently and ensures that students are always in contact with each other.

2. The possibility of independent education. Learning based on the distance method includes elementary, secondary, secondary-special, higher, part-time - evening and advanced training stages. It is important for professors and teachers to work on the basis of their personal work plans and to collect them in one electronic resource, as the main resource for students to use at any time and environment, and contribute to their independent education.

When creating a pedagogical framework in distance education, the following should be taken as a basis:

1) implementation of electronic education;
2) learning and teaching;
3) support and evaluation of students
4) support and evaluation of teachers

Among pedagogical technologies, the most interesting for distance education are technologies aimed at group work of students, cooperative learning, active cognitive process and working with various information sources[4].

It is through these technologies that the widespread use of problem-based methods, the application of knowledge in groups or independently, is the development of not only independent critical thinking, but also the culture of communication and the thirst for knowledge. Also, these technologies help students solve educational problems in the most effective ways.

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SANOAT, EKONOMETRIK MODELLASHTIRISH, ULARNING IQTISODIY MAZMUNI VA MOHIYATI

Annotatsiya. *Ushbu maqola sanoat tarmoqlari rivojlanishini ekonometrik modellashtirishning ilmiy-nazariy asoslarini o‘rganadi hamda O‘zbekiston iqtisodiyotidagi amaliy ahamiyatini tahlil qiladi. Sanoatning iqtisodiy mohiyati, tarixiy rivojlanishi va ekonometrik modellashtirishning metodologik asoslari xorijiy va o‘zbek olimlarining tadqiqotlari asosida ko‘rib chiqiladi.*

Kalit so‘zlar: *Sanoat, ekonometrik modellashtirish, iqtisodiy rivojlanish, O‘zbekiston, statistik tahlil.*

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INDUSTRY, ECONOMETRIC MODELING, THEIR ECONOMIC CONTENT AND ESSENCE

Abstract. *This article studies the scientific and theoretical foundations of econometric modeling of the development of industrial sectors and analyzes its practical significance in the economy of Uzbekistan. The economic essence of industry, its historical development and the methodological foundations of econometric modeling are considered on the basis of research by foreign and Uzbek scientists.*

Keywords: *Industry, econometric modeling, economic development, Uzbekistan, statistical analysis.*

Kirish. Sanoat iqtisodiyotning asosiy tarmog‘i sifatida moddiy ishlab chiqarish va jamiyatning ijtimoiy-iqtisodiy rivojlanishida muhim rol o‘ynaydi. Sanoatning rivojlanishi XVIII asr oxiridagi Sanoat inqilobidan boshlanib, mashina ishlab chiqarishining qo‘l mehnatini almashtirishi va kapitalistik munosabatlarning shakllanishi bilan yangi bosqichga chiqdi. Zamonaviy sanoat tarmoqlari og‘ir sanoat, yengil sanoat va yuqori texnologiyali sohalarni o‘z ichiga olib, global iqtisodiy integratsiya va texnologik innovatsiyalar natijasida diversifikatsiyalashdi. O‘zbekistonda sanoatning rivojlanishi o‘ziga xos yo‘lni bosib o‘tdi: o‘rta asrlardagi hunarmandchilikdan XIX asr oxiridagi paxta tozalash sanoatigacha va mustaqillik davrida iqtisodiyotni diversifikatsiya qilishga qaratilgan islohotlargacha.

Tahlil va natijalar. Sanoat tushunchasi va uning iqtisodiy hayotdagi o‘rni insoniyat tsivilizatsiyasining rivojlanish jarayonida muhim bosqichlarni boshdan kechirgan. Sanoatning tarixiy kelib chiqishi, birinchi navbatda, XVIII asr oxiri – XIX asr boshlarida Yevropada boshlangan Sanoat inqilobi bilan bog‘liq bo‘lib, bu davrda qo‘l mehnati mashina ishlab chiqarish bilan almashdi va iqtisodiy tizimlar kapitalistik munosabatlarga asoslangan holda qayta shakllandi. Sanoat inqilobi nafaqat ishlab chiqarish texnologiyalarini o‘zgartirdi, balki ijtimoiy-iqtisodiy munosabatlarning yangi shakllarini ham vujudga keltirdi. Bu jarayon Angliyada boshlanib, keyinchalik boshqa Yevropa mamlakatlari va dunyoning turli hududlariga tarqaldi. Sanoatning rivojlanishi bilan birga, iqtisodiy resurslardan foydalanish, mehnat taqsimoti va urbanizatsiya kabi jarayonlar ham tezlashdi. Zamonaviy sanoat tarmoqlari esa XX asrda texnologik innovatsiyalar va global iqtisodiy integratsiya natijasida yanada murakkab va diversifikatsiyalangan shaklga kirdi. Masalan, og‘ir sanoat, yengil sanoat (to‘qimachilik) va yuqori texnologiyali sanoat (elektronika, aviakosmik soha) kabi yo‘nalishlarning paydo bo‘lishi sanoatning iqtisodiy tuzilmadagi o‘zgarishlarini aks ettiradi.[58] Ekonometrik modellashtirish tushunchasi XX asrda Jan Tinbergen va Ragnar Frisch kabi olimlar tomonidan asos solingan bo‘lib, iqtisodiy nazariyalarni amaliy tekshirishga yo‘l ochgan. Tinbergen modellashtirishni iqtisodiy tsikllarni o‘rganishda qo‘llasa, Frisch uning nazariy asoslarini mustahkamladi. O‘zbek olimi I. Habibullayev ekonometrik usullarni mahalliy iqtisodiy jarayonlarni, masalan, hududiy o‘sishni bashorat qilishda qo‘llashni ta’kidlaydi. Klein makroiqtisodiy modellar orqali siyosiy qarorlar qo‘llab-quvvatlanishini ko‘rsatsa, Engle zamonaviy vaqt seriyalari tahliliga hissa qo‘shgan. O‘zbekiston misolida ekonometrik modellashtirish sanoat tarmoqlarining rivojlanishini, investitsiya samaradorligini yoki eksport dinamikasini tahlil qilishda foydalidir. O‘zbek olimlari orasida sanoat rivojlanishi bo‘yicha tadqiqotlar olib borilgan. Masalan, I.S. Xotamov va G.R. Madraxgimovaning ishlari O‘zbekiston iqtisodiyotidagi sanoat sektorini tahlil qilishda muhim yondashuvlarni ko‘rsatadi. Surxondaryo viloyati kabi hududlarda sanoatning rivojlanishini modellashtirishda mahalliy iqtisodiy va geografik omillarni e’tiborga olish muhimligi aytib o‘tiladi.Ekonometrik modellashtirishning afzalligi shundaki, u nafaqat tarixiy ma’lumotlarga tayangan holda real iqtisodiy holatni aks ettiradi, balki ilmiy asoslangan qarorlar qabul qilishga xizmat qiladi. Masalan, ishlab chiqarish hajmi, investitsiyaviy oqimlar, mehnat unumdorligi kabi ko‘rsatkichlar o‘rtasidagi bog‘liqlikni aniqlash orqali, sanoat tarmoqlari uchun samarali rivojlanish strategiyalarini ishlab chiqish mumkin.[59] Bunday yondashuv sanoat sektorining iqtisodiy samaradorligini oshirishda ham muhim rol o‘ynaydi. Zero, sanoat korxonalari darajasida olib borilayotgan iqtisodiy tahlillar ko‘pincha intuitiv yoki umumiy xulosalarga asoslanadi. Ekonometrik modellar esa ushbu

[58] Касимова, З. (2024). ЭКОНОМЕТРИЧЕСКОЕ МОДЕЛИРОВАНИЕ РОСТА ПРОИЗВОДСТВА ПРОМЫШЛЕННОЙ ПРОДУКЦИИ ПО РЕГИОНАМ С ИСПОЛЬЗОВАНИЕМ ПАНЕЛЬНЫХ ДАННЫХ. Экономическое развитие и анализ, 2(5), 127-132.

[59] Рахимов, А., & Эргашов, Я. (2021). Основы эконометрического моделирования развития дехканского хозяйства в условиях модернизации экономики. Экономика И Образование, (3), 222-227.

jarayonlarni ilmiy asosda, aniq va ishonchli statistik usullar bilan baholash imkonini beradi. Jumladan, sanoat tarmog‘ida ishlab chiqarish funksiyalari, xarajatlar tuzilmasi, rentabellik darajasi, inflyatsion omillar ta’siri kabi ko‘rsatkichlarni modellashtirish orqali aniqlashtirish mumkin.

Shuningdek, O‘zbekiston sanoat tarmoqlarida olib borilayotgan iqtisodiy islohotlarning samaradorligini baholashda ham ekonometrik modellashtirishning ahamiyati ortib bormoqda. Xususan, «O‘zbekiston – 2030» strategiyasida belgilangan maqsadlarga erishishda ilmiy asoslangan prognoz va tahlillarning dolzarbligi yuqori baholanmoqda. Shu sababli, ushbu magistrlik dissertatsiyasida sanoat rivojlanishiga ta’sir ko‘rsatuvchi omillarni aniqlash, ularning o‘zaro aloqalarini ekonometrik modellar orqali tahlil qilish, hamda ushbu tahlil natijalariga tayangan holda tavsiyalar ishlab chiqish asosiy ilmiy maqsad sifatida belgilanadi. Mazkur yondashuv sanoat iqtisodiyotini kompleks o‘rganish, tarmoqlararo muvozanatni saqlash va strategik rejalashtirish jarayonida katta ilmiy-amaliy ahamiyat kasb etadi. Birinchi navbatda, **investitsiyalar hajmi va tuzilmasi** sanoat rivojining asosiy omili hisoblanadi. Mahalliy va xorijiy investitsiyalarning hajmi, ularning tarmoqlar bo‘yicha taqsimlanishi, investitsiya loyihalarining muddati va rentabellik darajasi ishlab chiqarish samaradorligiga bevosita ta’sir ko‘rsatadi. Jumladan, O‘zbekiston sanoatida 2020–2024 yillar davomida xorijiy investitsiyalarning eng katta ulushi elektrotexnika, kimyo va qurilish materiallari tarmoqlariga to‘g‘ri kelgan bo‘lib, bu tarmoqlarda ishlab chiqarish hajmining o‘sishi qayd etilgan. Ikkinchidan, **mehnat resurslari sifati va malakasi** ham sanoat tarmoqlari rivojlanishining muhim omili hisoblanadi. Malakali ishchi kuchining mavjudligi, kadrlar tayyorlash tizimining rivojlanganligi, oliy ta’lim muassasalari va ishlab chiqarish o‘rtasidagi kooperatsiya darajasi sanoat texnologiyalarining joriy etilishi va innovatsion loyihalarning amalga oshirilishiga zamin yaratadi. Uchinchi muhim omil — **energiya va xomashyo resurslari bilan ta’minlanganlik**. Ishlab chiqarishning barqarorligi va o‘sishi resurslar bilan kafolatli ta’minlash darajasiga bevosita bog‘liq. Elektr energiyasi, tabiiy gaz, metall va mineral resurslar sanoatning asosiy "yoqilg‘isi" sifatida qaraladi. Xususan, energetika resurslari taqchilligi yuqori texnologiyali ishlab chiqarish jarayonlarining sekinlashuviga sabab bo‘lishi mumkin.[60] To‘rtinchidan, davlat siyosati va institutsional muhit. Sanoatni rivojlantirish strategiyasi, soliq imtiyozlari, subsidiyalar, davlat-xususiy sheriklik dasturlari, sanoat zonalari tashkil etilishi kabi omillar tarmoqlarning o‘sishiga kuchli turtki bo‘ladi. Misol uchun, O‘zbekistonda kichik va o‘rta biznesni rivojlantirish dasturlari doirasida soliq imtiyozlari berilmoqda, bu esa sanoat subyektlarining sonini ko‘payishiga xizmat qilmoqda. Sanoatning hududiy rivojlanishi milliy iqtisodiyotning barqaror o‘sishiga ta’sir qiluvchi omil sifatida davlat siyosatida muhim o‘rin tutadi. Beshinchidan, **texnologik taraqqiyot va innovatsiyalar** sanoatning raqobatbardoshligini ta’minlovchi asosiy omil hisoblanadi. Raqamli texnologiyalar, avtomatlashtirilgan boshqaruv tizimlari, ishlab chiqarishdagi robotlashtirish jarayonlari ishlab

[60] Sabirov, K. (2024). Econometrics I: Econometrics I. Nordic_Press, 1(0001).

chiqarishning samaradorligi va mahsulot sifatini oshirishga xizmat qiladi. Innovatsion rivojlanish ayniqsa kimyo, farmatsevtika, mashinasozlik tarmoqlarida yuqori sur’atlar bilan kechmoqda.

XULOSA

Sanoat tarmoqlari iqtisodiyotning tayanchi bo‘lib, ularning rivojlanishi investitsiyalar, resurslar, texnologiyalar va davlat siyosatiga bog‘liq. Ekonometrik modellashtirish sanoat jarayonlarini miqdoriy tahlil qilish, bashoratlar aniqligini oshirish va strategik qarorlar qabul qilishda muhim vositadir. O‘zbekiston kontekstida modellashtirish hududiy xususiyatlarni hisobga olgan holda ishlab chiqarish samaradorligini oshirish va iqtisodiy barqarorlikni ta’minlashga xizmat qiladi. Kelgusida ma’lumotlar sifatini yaxshilash va mutaxassislar malakasini oshirish orqali ekonometrik modellashtirishning samaradorligini yanada oshirish mumkin. Sanoat tarmoqlari rivojlanishi iqtisodiy o‘sishning asosiy omili bo‘lib, ekonometrik modellashtirish ushbu jarayonlarni ilmiy asosda tahlil qilish imkonini beradi. Xorijiy olimlar (Tinbergen, Frisch, Engle) modellashtirishni iqtisodiy tsikllar va vaqt seriyalari tahlilida qo‘llagan bo‘lsa, o‘zbek olimlari (Habibullayev, Xotamov) uni mahalliy sharoitlarga moslashtirdi. O‘zbekiston sanoatida ekonometrik modellar investitsiya samaradorligini, resurs taqsimotini va eksport salohiyatini baholashda muhimdir.

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REANIMATSION HOLATLARDA TIZIMLI VA REGIONAR LIMFOTROPIK TERAPIYANING ZAMONAVIY USULLARI

Annotasiya:*Maqolaning nashri reanimatsiya holatlarida klinik limfologiya usullaridan foydalanish bo'yicha adabiyot ma'lumotlarini ko'rib chiqishga bag'ishlangan. Uning birinchi qismida inson tanasining limfa va limfoid tizimlari o'rtasidagi umumiy munosabatlarga oid asosiy tushunchalar va atamalar va ularga limfa sanitariyasi ta'siriga erishish uchun dori vositalari va fizik texnologiyalar bilan ta'sir qilish usullari (limfostimulyatsiya, limfa korreksiyasi, limfoproteksiya, limfosupressiya) ko'rsatilgan. "Limfatik mintaqa" tushunchasining zamonaviy ta'riflari va uning asosiy aloqalari berilgan va limfotrop terapiyaning turli usullarining xususiyatlari ko'rsatilgan. Ikkinchi bo'limda farenks, burun va paranazal sinuslar, halqum, quloqning turli shakllaridagi o'tkir va surunkali yallig'lanish patologiyalari va shikastlanishlarida, shuningdek, profilaktika maqsadida, yosh bolalarda va katta yoshli bolalarda intubatsiyadan keyingi laringeal asoratlarning chastotasi va og'irligini kamaytirish uchun limfotrop terapiyani qo'llashning o'ziga xos natijalari keltirilgan. Mintaqaviy limfotrop (bilvosita) terapiya usullarini ishlab chiqishga qaratilgan tadqiqotlarning keng tarqalganligi to'g'risida xulosa chiqarildi. Hozirgi vaqtda ular paranasal, og'iz va yuqori nafas yo'llarining yallig'lanish patologiyasining turli shakllarini to'xtatishning samarali usullari sifatida qaraladi. Reanimatsiyada tizimli (to'g'ridan-to'g'ri limfotrop) terapiya usullari hali keng qo'llanilmaydi, ular kamroq va kam sonli bemorlarda qo'llaniladi; Ikkala yo'nalish ham qo'shimcha tadqiqotlar va texnik ishlanmalarni talab qiladi, chunki bugungi kunda ularni qo'llash mumkin bo'lgan reanimatsiya sharoitlari imkoniyatlari tugamagan.*

Kalit so‘zlar:*limfologiya, limfa tizimi, limfoid tizimi, limfa mintaqasi, limfotrop terapiya, limfosanitatsiya, reanimatsiya, og'ir ahvol.*

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MODERN METHODS OF SYSTEMIC AND REGIONAL LYMPHOTROPIC THERAPY IN INTENSIVE CARE

Abstract:*The publication of the article is devoted to a review of literature data on the use of clinical lymphology methods in intensive care cases. Its first part outlines the basic concepts and terms relating to the general relationship of the lymphatic and lymphoid systems of the human body with the methods of influencing them with drugs and physical technologies to achieve the effect of lymphosanitation (lymphostimulation, lymphocorrection, lymphoprotection, lymphosuppression). Modern definitions of the concept of "lymphatic region" and its main links are given, and the features of various methods of lymphotropic therapy are shown. The second part presents specific results of the use of lymphotropic therapy for various forms of acute and chronic inflammatory pathology and trauma of the pharynx, nose and paranasal sinuses, larynx, ear, as well as for preventive purposes, to reduce the frequency and severity of post-intubation laryngeal complications in young children and in adults with prolonged tracheal intubation. It is concluded that research aimed at developing methods of regional lymphotropic (indirect) therapy prevails. Currently, they are considered as effective ways to relieve various forms of inflammatory pathology of the paranasal, oral and upper respiratory tract. Methods of systemic (direct lymphotropic) therapy in intensive care are not yet widely used; they are used much less frequently and in a small number of patients. Both directions require further research and technical development, since today the potential for resuscitation is far from exhausted, where they could find their application.*

Key words: *lymphology, lymphatic system, lymphoid system, lymphatic region, lymphotropic therapy, lymphatic sanitation, resuscitation, critical condition.*

Zamonaviy limfologiya bir vaqtning o'zida inson tanasining ikkita bir-biriga bog'langan tizimini - limfa, limfa tomirlari, uyushgan limfoid tuzilmalar va hujayralarni o'z ichiga olgan limfa va limfoid tizimlarini o'rganadigan integratsiyalashgan tibbiyot fanidir.

Limfa tizimi yurak-qon tomir tizimining quyi tizimi sifatida limfa to'shagini (limfa kapillyarlari, tomirlar, magistrallar, o'ng limfa va ko'krak yo'llari), shu jumladan limfa tugunlari ichidagi limfa oqimi yo'llarini va hujayra tarkibi bilan limfa o'zini o'z ichiga oladi.

Limfoid tizim asosan immunitet tizimi bilan bog'liq, qizil suyak iligi va timus (birlamchi limfoid organlar), taloq, bodomsimon bezlar, limfa tugunlarining limfoid parenximasi, limfoid to'qimalarning bir va guruh klasterlari, shuningdek, to'qimalar va organlardagi (ikkilamchi limfoid organlar) alohida limfoid hujayralar kabi organlarni o'z ichiga oladi. Organlarning ikkala guruhi ham bo'ysunadi. Limfatik va limfoid tizimlarning konjugatsiyasining morfofunksional argumenti limfa tugunlari bo'lib, bu Yu.I Borodinga (1993) limfa tugunini atrof-muhit bosimining belgisi va mintaqaviy gemo- va limfodinamikaning regulyatori deb atashga imkon berdi. Asosiy transport va almashinuv jarayonlari sodir bo'ladigan, birinchi tarkibiy va funktsional buzilishlar qayd etiladigan anatomik bo'shliq, bir tomondan, tabiiy intrakorporeal limfodetoksifikasyon jarayonlari amalga oshiriladi, ikkinchi tomondan, limfa mintaqasi.

Limfa mintaqasi uchta asosiy bo'g'inni o'z ichiga oladi: 1 - limfa tizimining ildizlari, limfa kapillyarlari yo'nalishi bo'yicha harakatlanuvchi to'qima suyuqligining to'planishi va tashilishi sodir bo'lgan interstitiumdagi qon tomir bo'lmagan mikrosirkulyatsiya yo'llari; 2 – limfa hosil qiluvchi va tashuvchi qon tomir limfa tuzilmalari (limfa kapillyarlari, tomirlar); 3 - mintaqaviy limfa tugunlari, shuningdek, limfa tashish va uning detoksifikatsiyasida ishtirok etadigan limfoid to'qimalarning yagona yoki guruhlangan klasterlari. Limfatik mintaqaning barcha elementlari sinxron va o'zaro bog'liq holda faoliyat yuritib, hujayralarni, pericellular bo'shliqni va umuman to'qimalarni drenajlash va zararsizlantirishni ta'minlaydigan tizimli va funktsional birlikni tashkil qiladi. Interstitsial transport va limfa drenajining buzilishi nafaqat yallig'lanish jarayonlarining patogenezida muhim rol o'ynaydi, balki bu buzilishlarni davolashda ham hisobga olinadi. Bu faktlar endoekologik reabilitatsiya dasturini, interstitsial gumoral transport, limfa drenaji va limfa detoksifikatsiyasiga ta'sir ko'rsatish orqali endoekologik (pericellular, interstitsial) gomeostazni tiklash tizimini ishlab chiqish uchun asos bo'lib xizmat qildi. Organni samarali reabilitatsiya qilish faqat ushbu jarayonlarning morfofunksional muvofiqligi bilan amalga oshirilishi mumkin.

Dori vositalari, tibbiy, mexanik va fizik texnologiyalardan foydalangan holda limfa va limfoid tizimlarga ta'siri ko'plab jarrohlik, kardiologik, travmatologik, ginekologik, yuqumli va boshqa kasalliklar. Hozirgi vaqtda ular deyarli barcha tibbiyot mutaxassisliklari va sohalariga tegishli bo'lgan "klinik limfologiya" tushunchasiga birlashtirilgan.

Dori vositalarining limfa tizimiga terapevtik ta'sir qilish usullarining ikki guruhi mavjud - to'g'ridan-to'g'ri va bilvosita. To'g'ridan-to'g'ri (endolimfatik) usullar asosiy yoki periferik limfa tomirlari, limfa tugunlari va ko'krak yo'llarining kanulyatsiyasini o'z ichiga oladi, bu limfa tizimida preparatning yuqori va uzoq muddatli kontsentratsiyasini 1 dan 3 kungacha rasmiy yagona dozani bir marta yuborish bilan hosil qilishni o'z ichiga oladi. Biroq, Yu. M. Levin (1986) nuqtai

nazaridan, bu har doim ham mumkin emas, chunki ponksiyon uchun ishlatiladigan limfa tomirlarining transport davomi bo'lgan markaziy limfa va alohida limfa tugunlarida dorivor moddalarning yuqori konsentratsiyasi hosil bo'ladi, boshqalarda, shu jumladan patologik jarayonda ishtirok etuvchi moddalar juda kichik yoki boshqa moddalar bo'lishi mumkin. Bundan tashqari, limfa tomirlarini kateterizatsiya qilish ko'p mehnat talab qiladigan va travmatik jarayon bo'lib, maxsus asboblar, jihozlangan operatsiya xonasi va shifokorning zarur jarrohlik ko'nikmalarini talab qiladi. Ushbu holatlarni hisobga olgan holda, bir qator mutaxassislar limfa drenajining mintaqaviyligiga qarab dori-darmonlarni (teri ostiga yoki mushak ichiga, retroperitoneal yuborish, submukozal in'ektsiya) qo'llashning jarrohlik bo'lmagan usulini taklif qilishdi. Moddalarni etkazib berish limfa kapillyarlarining eng ko'p namoyon bo'ladigan sohasiga in'ektsiya yo'li bilan amalga oshiriladi, shu bilan birga ularning limfa tizimiga ko'payishi uchun sharoit yaratadi. Ushbu usul bilvosita endolimfatik administratsiya yoki mintaqaviy limfotropik terapiya deb ataladi. Limfatik mintaqada va to'g'ridan-to'g'ri patologik markazda preparatning yuqori konsentratsiyasini yaratishga imkon beradi, lekin ayni paytda qo'llash usulini sezilarli darajada osonlashtiradi. Bu jarrohlik manipulyatsiyasi bilan bog'liq bir qator jiddiy asoratlarni bartaraf etib, mintaqaviy limfotrop terapiyani nafaqat jarrohlar, balki boshqa mutaxassislar, jumladan, ambulatoriya xizmati sohasida ishlaydiganlar uchun ham qulayroq qiladi.

Olingan ta'sirning tabiatiga ko'ra, limfatik hududga ta'sir qilishning barcha usullarini shartli ravishda limfatik stimulyatsiya, limfatik tuzatish, limfatik himoya va limfa bostirishga bo'lish mumkin.

Ulardan eng mashhuri va eng ko'p qo'llaniladigan usuli limfatik stimulyatsiya usuli bo'lib, uning maqsadi organlardan limfa chiqishi hajmini va tezligini oshirishdir. Har qanday mushak va suv yuki (ichki suv iste'moli bilan ham, suvning barcha turlari bilan ham) tanaga sezilarli limfa stimulyator ta'siriga ega. Tibbiy amaliyotda limfatik stimulyatsiya usullari sifatida ko'plab fizioterapevtik va dorivor vositalar qo'llaniladi. Ular to'qimalarda osmotik bosimni o'zgartirib, qon va limfatik mikrotomirlarning tomir devorining o'tkazuvchanligini oshiradi va ulardan erkin suvning chiqishi bilan interstitiumdagi megamolekulalarning parchalanishiga yordam beradi. Bu erda eng ko'p ishlatiladigan kokteyllar orasida glyukoza, lidokain, dikain, lidaza, deksametazon va boshqa bir qator dorilar mavjud. Ta'sir qilishning jismoniy usullaridan past intensivlikdagi lazer va ultratovush eng yaxshi limfa rag'batlantiruvchi ta'sirga ega.

Limfatik stimulyatsiya ikki turni o'z ichiga olishi mumkin - dinamik va metabolik. Dinamik limfa stimulyatsiyasining maqsadi organ yoki tana qismlarining tomirlarida limfa oqimining hajmini va chiziqli tezligini oshirishdir. Limfostimulyator oqsil molekulalari bilan bog'lanmagan interstitiumdagi erkin (harakatlanuvchi) to'qima suyuqligining massasini oshiradi. Bunda to’qima ichidagi bosim kuchayadi, tolali biriktiruvchi to’qima ramkasi cho’zilib, limfa kapillyarlari diametri kattalashadi, endotellararo kontaktlar ochiladi, tomir ichidagi bosim pasayadi, kapillyarlarda to’qima suyuqligining rezorbsiyasi kuchayadi, yangi hosil bo’lgan limfa massasi ko’payadi, limfa oqimi kuchayadi. Metabolik

limfostimulyatsiya limfoid organlar va to'qimalarda hujayra tarkibini va hujayralarning morfofunksional holatini yaxshilashga qaratilgan. Terapevtik va profilaktik maqsadlarda limfoid organlarning hujayralariga ta'sir qiluvchi dorilarni qo'llash orqali biz ularning limfatik korreksiyasi va limfa himoyasi (tushirish) haqida gapirishimiz mumkin, bu metabolik limfa stimulyatsiyasining variantlari sifatida qaralishi mumkin.

Limfosupressiya yoki limfodepressiya usuli qo'llaniladi, asosan, o'sma kengayishi sharoitida limfa yo'llari orqali saraton hujayralarining tarqalishini blokirovka qilish uchun onkologiya.

Otorinolaringologiyada LOR a'zolarida yallig'lanish jarayonlari namoyon bo'lishining o'ziga xosligi va mintaqaviy limfa tugunlarining reaktsiyasi tufayli ko'pincha mintaqaviy limfotrop usullar qo'llaniladi. Ularning rivojlanishi taxminan 20 yil oldin, 20-asrning 90-yillari oxirida boshlangan.

C V. Maltsev (2000) dekompensatsiyalangan surunkali tonzillitli bemorlarni kompleks konservativ davolashning bir qismi sifatida mintaqaviy limfotrop antibiotiklardan foydalanishni taklif qildi. Usulning mohiyati antibiotikni palatin bodomsimon bezlarining limfa sohasiga - digastrik-bo'yin tugunining maydoniga, bodomsimon bezlar uchun "sentinel" ga kiritishdan iborat. Antibiotik eritmasi teri ostiga sternokleidomastoid mushakning yuqori va o'rta uchdan bir qismining oldingi qirrasi bo'ylab yuboriladi,har ikki tomon. Shu bilan birga, mintaqaviy limfa oqimini rag'batlantirish uchun ushbu hududga ultratovush qo'llaniladi. Davolash kursi 5-7 protseduradan iborat. Keyinchalik, hamkasblarning yallig'lanish reaktsiyalari va yumshoq to'qimalarning shishishi mumkinligi haqidagi fikrini inobatga olgan holda, muallif in'ektsiyalardan voz kechdi va faqat malham asosida antibakterial preparatning fonoforezini o'z ichiga olgan yumshoqroq usulni taklif qildi. Davolash natijalarini tahlil qilish sof fonoforetik va inyeksiya-fonoforetik usullar o'rtasida sezilarli farqlarni aniqlamadi.

A. V. Golovnev (2000) surunkali tonzillitni mintaqaviy limfotrop terapiyasi uchun T-aktivin preparatidan foydalangan, bu uning radonli suvli balneoterapiya muolajalari fonida aniqroq ta'sirini hayvonlar tajribasida isbotlagan.

E. G. Shaxova, S. E. Kozlovskaya (2005) fonoforez yordamida polikatanning suvli eritmasini 1:20 suyultirilganda palatin bodomsimon bezlarning mintaqaviy limfa tugunlari maydoniga 2 daqiqa davomida yuborishdi. Jarayon bodomsimon lakunalarni ultratovushli vakuumli yuvish bilan birgalikda amalga oshirildi. Mikrobial ifloslanishning bakteriologik tahlili va bodomsimon bezlarning morfologik tekshiruvi an'anaviy terapiya bilan solishtirganda bemorlarning 60 foizida usulning samaradorligini aniqladi.

Surunkali tonzillitli bemorlarni davolashda mintaqaviy limfotrop terapiyaning samaradorligini baholash uchun R. O. Stanishevskiy (2013) ushbu kasallik bilan og'rigan bemorlarning qon zardobining pro- va antioksidant faolligini o'rganishni o'tkazdi. Davolashdan oldin va davolash vaqtida qon zardobida va lakunalardan ajralishda immunoassay fermenti yordamida yallig'lanishga qarshi (IL-1B; TNF-a) va yallig'lanishga qarshi (IL-4) sitokinlarning tarkibi aniqlandi.

Limfotropik terapiya tizimli reaktsiyani, IL-4 va TGF-B1 tarkibini mos ravishda 7,1 va 16,8% ga normallashtirishi isbotlangan.

Rinologiyada limfologik usullarni qo'llash bo'yicha birinchi klinik tadqiqotlar V. Yu., M. Ya. Kozlov, E. A. Tsvetkov (1995) rinosinusogen orbital asoratlari bo'lgan bolalarda. Mualliflar antibiotikni oyoqdagi kateterlangan limfa tomirlari orqali endolimfatik (to'g'ridan-to'g'ri) yuborish usulidan foydalanganlar. Texnika samarali deb tan olingan va surunkali rinosinusitning og'ir shakllari va rinogen orbital asoratlarni davolash algoritmining bir qismi sifatida foydalanish uchun tavsiya etiladi. K. Qosimov va boshqalar. (2018) eksperimental va klinik jihatdan paranasal sinuslarning yallig'lanish kasalliklarini davolashda an'anaviy terapiyaga nisbatan mintaqaviy limfotrop terapiyadan foydalanishning afzalligini ko'rsatdi. Ular paranasal sinuslarning yallig'lanish kasalliklari bilan og'rigan bemorlarni davolashning qiyosiy tahlilini o'tkazdilar, bunda ampitsillinni ularning bo'shliqlariga va limfatik hududga limfotropik tarzda kiritish orqali. Limfotropik davolanish vaqtida dorivor moddalarni yuborish submandibular mintaqaning teri osti to'qimasi orqali, submandibulyar limfa tugunlarining proektsiyasida amalga oshirildi. O'tkir yiringli maksiller sinusit bilan og'rigan bemorlarda klinik tiklanish an'anaviy terapiya bilan 72,5% va limfotrop terapiyadan keyin 94,4% ni tashkil etdi. O. E. Malysheva (2011) ishida surunkali maksiller sinusit bilan og'rigan bemorlarda an'anaviy davolash va ozon bilan birgalikda limfotropik antibakterial terapiyaning qiyosiy tahlili o'tkazildi. Steril izotonik natriy xlorid eritmasini ozonlash Medozons BM 01 ozonizator yordamida amalga oshirildi. Ozon konsentratsiyasi 4-6 mg / l bo'lgan natijada olingan eritma kateter orqali maksiller sinusni yuvish uchun ishlatilgan. Jarayon kuniga bir marta amalga oshirildi.

Birinchi avlod sefalosporinlari limfotrop terapiya uchun antibakterial preparat sifatida ishlatilgan. Ushbu texnikaning samaradorligi maksiller sinuslardan oqindi mikrobiologik tekshirish bilan tasdiqlangan. Limfotrop terapiya qo'llanilgan guruhda sinuslarni to'liq zararsizlantirish 71,9% hollarda, an'anaviy terapiyani olgan bemorlarda esa atigi 54,8% ga erishildi. Antibiotiklarni endolimfatik yuborishdan tashqari, D. V. Kravchenko (1997) turli xil immunitet tanqisligi holatlari bilan kechadigan burun va paranasal sinuslarning yallig'lanish kasalliklari uchun mintaqaviy immunostimulyatsiya qiluvchi limfotrop terapiyani taklif qildi. U T-aktivin immunomodulyatorini ta'sirlangan tomondan submandibular mintaqaga (sinuslarning limfatik hududi) kiritdi va an'anaviy davolanishga nisbatan aniqroq ta'sirga erishdi.

Otologiyada mintaqaviy limfotrop terapiyaning samaradorligi bo'yicha birinchi tadqiqotlar H. E. Shayxova va boshqalar tomonidan o'tkazildi. (1999). Ular morfologiyani o'rganishgan eksperimental o'tkir otitis media bilan chinchilla quyonlarida o'rta quloqning limfatik mintaqasi. Antibiotik va lasix eritmasi limfotrop dori sifatida ishlatilgan, u subperiosteal ravishda kasal quloqning mastoid jarayoniga kiritilgan. Mintaqaviy limfa tugunlarining drenaj funktsiyasini rag'batlantirish tufayli yallig'lanish jarayonining kamayishi qayd etildi.

D.V. Kravchenko (2002) 0,5% novokain eritmasida lidaza (12 U) bilan retroaurikulyar hududni oldindan infiltratsiya qilish yo'li bilan o'tkir otitis media

bilan og'rigan bemorlarda immunitet buzilishlarini tuzatish uchun Tamerit (100 mg) immunomodulyatorini limfotropik yuborishdan foydalangan. Ushbu protseduraning yiringli-yallig'lanish jarayonining borishiga va ushbu toifadagi bemorlarning immunitet tizimining holatiga ijobiy ta'siri isbotlangan.

S.Yu.Krotov (2013) o‘rta quloqning limfa sohasi morfologiyasini batafsil o‘rganib, uning 3 guruh limfa tugunlaridan iboratligini ta’kidladi. Ushbu guruhlarning har biri limfa drenaji, limfatik tuzatish va limfa himoyasi nuqtai nazaridan o'ziga xos funktsiyalarga ega. Shuningdek, u har bir mintaqaviy limfa zonalarida past chastotali ultratovush (ultrafonoforez) yordamida to'qimalarga dori aralashmasini kiritish shaklida limfotrop terapiya usulini muhim takomillashtirishni taklif qildi. Ishlab chiqilgan usul invaziv emas, asoratlar yoki nojo'ya ta'sirlarni keltirib chiqarmaydi, yosh cheklovlari yo'q va KBB shifoxonalari va klinikalarida muvaffaqiyatli amalga oshirilishi mumkin. Past chastotali ultratovush limfotropik tarzda yuboriladigan dorilarning molekulyar tarkibini o'zgartirmasligi va ularning quloq pardasi orqali timpanik bo'shliqqa kirib borishini osonlashtirishi isbotlangan. Bu xususiyatlar asos bo'lib xizmat qildi ekssudativ otit ommaviy axborot vositalarining uzaygan shakllarini davolashda ushbu texnologiyadan foydalanish.

Mintaqaviy limfotrop terapiya va ultratovush texnologiyalarining kombinatsiyasi surunkali yiringli otit ommaviy axborot vositalari bilan og'rigan bemorlarda ham konservativ davolashning mustaqil usullari sifatida, ham operatsiya qilingan quloq kasalliklarini davolashda jarrohlik bilan birgalikda qo'llanilishini topdi.

V. A. Nasyrov va boshqalar. (2014) otogen intrakranial asoratlari bo'lgan bemorlarni davolashda limfotrop terapiyadan foydalanish tajribasiga ega. Texnika lidaza, gidrokortizon, 0,5% novokain eritmasi, lasix va antibakterial preparatdan tashkil topgan dorivor aralashmani bachadon bo'yni va yuqori ko'krak mintaqalarining interspinous bo'shliqlariga kiritishni o'z ichiga oladi. Umurtqa pog'onasi, bu jarrohlik bilan birgalikda operatsiyadan keyingi davolanish uchun zarur bo'lgan vaqtni qisqartirish bilan birga uning natijalarini yaxshilashga imkon beradi.

Otolaringologiyada konservativ davoning mustaqil usuli sifatida halqum kasalliklarida mintaqaviy limfotropik terapiya hali ham kamdan-kam qo'llaniladi. Shu bilan birga, ushbu sohadagi klinik o'zgarishlarning sezilarli ijobiy natijalari profilaktik maqsadlarda mintaqaviy limfotropik terapiyadan foydalanishni o'z ichiga oladi. Usul uzoq vaqt traxeya intubatsiyasi bo'lgan yosh bolalarda intubatsiyadan keyingi laringeal asoratlarning chastotasi va og'irligini kamaytirish uchun ishlatilgan.

Intubatsiyaning birinchi kunidan boshlab har kuni 5-6 kun davomida past chastotali ultratovush fonoforez yordamida halqum va uning o'rta va pastki chetlari bo'ylab 0,25% novokaindagi 32 U lidazaning suvli eritmasi yuboriladi kleidomastoid mushaklar. Rivojlangan laringeal himoya usulidan foydalanish muallifga intubatsiyadan keyingi o'tkir laringit bilan kasallanishni 3 baravar kamaytirishga va o'tkir laringitning davomiyligini ikki baravarga qisqartirishga va

halqumning surunkali postintubatsiya stenozi ehtimolini kamaytirishga imkon berdi.

Xulosa. Taqdim etilgan ma'lumotlardan ko'rinib turibdiki, bemorlarni limfa tizimiga yoki u orqali, to'qimalar va organlarga ta'sir qilish orqali davolash masalalari.

reanimatsiya texnikasi so'nggi 30 yil ichida asta-sekin ishlab chiqildi. Tadqiqotlarning aksariyati mintaqaviy limfotrop terapiya usullarini ishlab chiqishga qaratilgan. Hozirgi vaqtda ular paranasal, og'iz mintaqasi va yuqori nafas yo'llarining yallig'lanish patologiyasining turli shakllarini to'xtatishning samarali usullari sifatida qaraladi. Endolimfatik (tizimli) terapiya usullari hali keng qo'llanilmaydi, ular kamroq va kam sonli bemorlarda qo'llaniladi. Ikkala soha ham qo'shimcha tadqiqotlarni va yangi texnik ishlanmalarni izlashni talab qiladi, chunki bugungi kunda ular qo'llanilishi mumkin bo'lgan reanimatsiya holatlari uchun imkoniyatlar tugamagan.

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TO`QIMINING TUZILMALARI YAXTILIGINI VA ADEKVAT DIFFERENTSIALANISHINI SAQLASHDA AFERENT NEYRONNING O`RNI

Rezyume: *Maqolada tabaqalashtirilgan mushuk o'pkasining katta va kichik alveolyar hujayralarida nonspesifik esteraza faolligining o'zgarishlar dinamikasi o'rganiladi. Sutemizuvchilarda o'pkaning denervatsiyasiga mos keladigan orqa miya ganglionlarini ikki tomonlama ekstirpatsiya qilish, shuningdek vagus nervini olib tashlash orqali erishildi. O'pkaning denervatsiyasi uning to'qimalarida tipik o'zgarishlar majmuasining paydo bo'lishiga olib keladi.*

Kalit so'zlar: *itlar, mushuklar, quyonlar, kalamushlar, hujayralar, yadro, denervatsiya, differentsiatsiya, to'qima, o'pka.*

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ON THE ROLE OF AFFERENT NEURON IN MAINTAINING STRUCTURAL INTEGRITY AND ADEQUATE DIFFERENTIATION OF TISSUE

Abstract: *The article studies the dynamics of changes in the activity of nonspecific esterase in large and small alveolar cells of differentiated cat lung. Sensory denervation of the lungs in mammals was achieved by bilateral extirpation of the corresponding spinal nodes, as well as by removing the vagus nerve. Sensory denervation of the lungs causes the appearance of a complex of typical changes in its tissues.*

Keywords: *dogs, cats, rabbits, rats, cells, nucleus, denervation, differentiation, tissue, lungs.*

Kirish. Adabiyot ma'lumotlari shuni ko'rsatadiki, ulkan hujayralarning paydo bo'lishi turli xil past darajada differensiatsiyalangan to'qimalarga xosdir [1]. Odam o'pkalaridagi antibiotiklar bilan davolashga bo'ysunmaydigan surunkali yallig'lanish hodisalari, ba'zi hollarda, asab tolalari o'tkazuvchanligining buzilishi natijasida kelib chiqadigan patologik jarayonning oqibati bo'lishi mumkin[4,2]. Deafferentatsiyadan keyin to'qimalarda ro'y beradigan morfologik o'zgarishlar

almashinuv jarayonlarining buzilishi bilan boshlanadigan destruktiv shikastlanishlarning yakuniy natijasidir. Denervatsiya qilingan to'qimalardagi almashinuv jarayonlarining o'zgarishi ko'plab tadqiqotchilar tomonidan o'rganilgan [3,5].

Tadqiqot maqsadi. Afferent neyronning to'qimalarning tuzilish yaxlitligini va adekvat differensiatsiyasini ta'minlashdagi rolini o'rganish.

Tadqiqot materiallari va usullari. Tajriba hayvonlari sifatida itlar, mushuklar, quyonlar va kalamushlar ishlatildi. Tadqiqot ob'ekti o'pka to'qimasi edi. Sutemizuvchilar sinfidagi hayvonlarda o'pkaning sezgir denervatsiyasi tegishli orqa miya gangliylarini ikki tomonlama ekstripatsiya qilish va vagus nervini olib tashlash orqali amalga oshirildi. Oddiy bo'yash usullari (gematoksilin-eozin, Vanizon bo'yicha) va maxsus neyrogistologik usullar (Bil'shovskiy-Gros usuli, Lavrent'yev modifikatsiyasi) qo'llanildi.

Tadqiqot natijalari. Olingan ma'lumotlar shuni ko'rsatadiki, har ikkala operatsiya turida ham tajriba hayvonlarining o'pka to'qimalarida bir xil o'zgarishlar yuzaga keladi. Barcha tajriba hayvonlarida differensiatsiyalangan o'pka to'qimalarida mikroskopik o'zgarishlar bir xildir. Ular, birinchi navbatda, keskin vazomotor buzilishlar bilan xarakterlanadi. Qon tomirlari devorining barcha qatlamlarida bir qator morfologik o'zgarishlar aniqlanadi. Endoteliy hujayralari shishgan, gipertrofiyalangan ko'rinadi. Silliq mushak hujayralarining yadrolari ko'pincha cho'zilib, bo'linib, egri shakl oladi. Qon tomirlaridan qonning suyuq qismining ekssudatsiyasi o'pka to'qimalarining shishishiga olib keladi. Ekssudativ hodisalar kemiruvchilarda eng aniq namoyon bo'ladi. Deafferentatsion o'zgarishlarning xarakterli xususiyatlaridan biri kengaygan qon tomirlaridan polinuklearlarning to'qimalarga kirib borishi va o'pkaning turli qismlarida katta leyko tsitar infiltratsiyalarning shakllanishidir. Bu hodisaning eng yuqori intensivligi operatsiyadan keyin 10-12-kunlarda kuzatiladi. Keyingi vaqtlarda infiltratsiya kamaysa ham, u barcha keyingi kuzatuv muddatlarida sezilarli darajada saqlanib qoladi. O'pka to'qimalarining leyko tsitar infiltratsiyasi kemiruvchilar va mushuklarda eng yuqori darajada bo'ladi. Limfoid xarakterdagi infiltratsiya, ehtimol, ushbu sinf vakillarida to'qimalarning psevdoeozinofil leyko tsitlar bilan o'rtacha darajada infiltratsiyalanishining sabablaridan biridir. Shuni yodda tutish kerakki, organlar desimpatizatsiyasida, qon tomirlari lümenining kengayishiga qaramay, tadqiqotchilar hech qachon to'qimalarning aniq shishishi va leyko tsitlar bilan infiltratsiyasini kuzatmagan. Ehtimol, bu jarayonda turli xil asab tolalarining trofik funktsiyasining o'ziga xosligi bilan bog'liq omillar muhim ahamiyatga ega. Qon tomirlari buzilishlari, shish va polimorf yadroli leyko tsitlar bilan to'qimalarning infiltratsiyasi fonida o'pka to'qima komponentlarining normal tuzilishining buzilishiga ishora qiluvchi bir qator belgilar paydo bo'ladi. Deafferentatsiyadan keyin birinchi haftaning oxiriga kelib, ayniqsa kichik kalibrli bronxlarning lümeni leyko tsitlar, makrofaglar va tushgan epiteliy hujayralarini o'z ichiga olgan shilimshiq bilan to'ladi. Bronx epiteliyning ba'zi joylarida uning ko'p qatorlidan bir qatorli shaklga o'tishi kuzatiladi. Boshqa hollarda bronx epiteliysi hujayralarining proliferatsiyasi ko'rinadi. Kosasimon hujayralar gipertrofiyalanadi,

ularning soni keskin ortadi. Bronx bezlari uchun sekretsiyaning susayishi xosdir. Proliferatsiyalanuvchi bez hujayralari bez lümenini to'liq yoki qisman yopishi mumkin. Kemiruvchilar va qushlar o'pkalarida bu hodisa itlar va mushuklarga qaraganda ertaroq va yanada intensivroq sodir bo'ladi. Limfoid to'plamlarning asosiy elementlari turli darajadagi pishgan limfo tsitlar va retikulyar hujayralardan iborat. Oxirgilar o'lchamlari bo'yicha juda xilma-xildir, ularning sitoplazmasi yanada bazofil bo'lib qoladi. Retikulyar hujayralar mitoslar sonining keskin ortishi kuzatiladi. Limfoid to'plamlar hududida ham, o'pka parenximasining boshqa joylarida ham plazmatik va mast hujayralar soni sezilarli darajada ko'payadi. Deafferentatsion o'zgarishlar uchun xarakterli bo'lgan narsa to'qimalarda ulkan hujayralarning paydo bo'lishidir. Sutemizuvchilarning sog'lom o'pkalarida ulkan hujayralar kam uchraydi. Boshqa sinflarning operatsiya qilinmagan hayvonlarining o'pkalarida biz ularni hech qachon uchratmadik. Kemiruvchilarda periferik joylashgan bir nechta kichik yadrolarga ega ulkan hujayralar ham uchraydi. Parenxima o'zgarishlari bilan bir qatorda, differensiatsiyalangan o'pkalar stromasida ham ma'lum buzilishlar kuzatiladi. Fibroblastik qator hujayralari polimorf bo'lib qoladi, ularning yadrolari o'lchamlari bo'yicha o'zgaradi, yadrochalar kattalashadi. Elastik tolalardagi destruktiv o'zgarishlar kechroq sodir bo'ladi va ularning egri shaklini yo'qotishi, ba'zida bo'laklarga bo'linishi bilan izohlanadi. Uzoq muddatli kuzatuvlarda deafferentatsion o'zgarishlarning intensivligi biroz pasayishi qayd etiladi. Differensiatsiyalangan o'pka to'qimalarida kuzatilgan morfologik o'zgarishlar to'qima elementlarining yuqori spetsifiklikni yo'qotishiga ishora qiluvchi belgilarning paydo bo'lishini ko'rsatadi. Ko'plab tadqiqotlar shuni ko'rsatadiki, past darajada differensiatsiyalangan hujayralar paydo bo'lgan hollarda, ularda yadro-sitoplazmatik nisbatning oshishi qayd etiladi. Hujayralar differensiatsiyasida yadro-sitoplazmatik nisbatning oshishi ularning ixtisoslashuvini yo'qotishi va asosan vegetativ funktsiyani bajarishi bilan bog'lanadi. Sezgir innervatsiyadan mahrum bo'lgan to'qimalar hujayralarining sitofiziologik o'rganilishi ma'lumotlarini tahlil qilganda, yashirin davrning qisqarishi, proliferativ va mitotik faollikning oshishi xulosasiga kelish mumkin.

Xulosa.Shunday qilib, turli turlarga, oilalarga va sinflarga mansub hayvonlarda o'pka to'qimalarining sezgir denervatsiyasidan keyin bir xil o'zgarishlarning yuzaga kelishi sezgir neyronning organizmning innervatsiya qilingan qismlarining tuzilish yaxlitligi va adekvat differensiatsiyasini ta'minlashda muhim rol o'ynashi va yetakchi ahamiyatga ega ekanligini ko'rsatadi. Deafferentatsion o'zgarishlarning eng muhim xususiyati hujayra elementlarining past darajada differensiatsiyalangan xarakterga ega bo'lishi va ularning yuqori morfofunksional spetsifiklik xususiyatlarini yo'qotishidir.

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BOSHLANG‘ICH SINF O‘QUVCHILARIDA O‘QISH SAVODXONLIGINI RIVOJLANTIRISH USULLARINI TAKOMILLASHTIRISH YO‘LLARI

Annotatsiya: *Ushbu tadqiqot boshlang‘ich sinf o‘quvchilarida o‘qish savodxonligini rivojlantirish usullarini takomillashtirish yo‘llarini aniqlash va samaradorligini oshirishga qaratilgan. Bugungi kunda o‘qish savodxonligi nafaqat ta’lim sifati, balki jamiyatning intellektual taraqqiyoti bilan ham bevosita bog‘liq. Tadqiqotda o‘quvchilarning savodxonlik darajasini oshirishga xizmat qiluvchi ilg‘or pedagogik texnologiyalar, innovatsion yondashuvlar va integratsiyalashgan usullar tahlil qilindi. Tadqiqotda tajriba-sinov ishlari amalga oshirilib, turli ta’lim metodlarining samaradorligi va takomillashtirish yo‘llari o‘rganildi. Olingan natijalar asosida, boshlang‘ich sinflarda qo‘llash mumkin bo‘lgan samarali pedagogik strategiyalar ishlab chiqildi va amaliy tavsiyalar shakllantirildi. Tadqiqot natijalari boshlang‘ich ta’lim tizimini yanada takomillashtirish, o‘qituvchilarga metodik ko‘rsatmalar berish va kelgusida chuqurroq o‘rganish uchun ilmiy asos yaratishga xizmat qiladi.*

Kalit so‘zlar: *boshlang‘ich sinf, o‘qish savodxonligi, xotira, takomillashtirish, ta’lim samaradorligi*

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WAYS TO IMPROVE METHODS OF DEVELOPING READING LITERACY IN PRIMARY STUDENTS

Abstract:*The purpose of this study is to identify ways to improve and increase the effectiveness of methods for developing reading literacy in students in primary schools. Today, reading literacy is associated not only with the quality of education, but also with the intellectual development of society. The study analyzes advanced pedagogical technologies, innovative approaches and complex methods that help improve the level of literacy of students. The study included experimental work to study the effectiveness of various teaching methods and ways to improve them. Based on the results obtained, effective pedagogical strategies have been developed that can be used in elementary grades, and practical recommendations have been formulated. The results of the study will serve to further improve the primary education system, provide methodological assistance to teachers and create a scientific basis for further in-depth study.*

Key words: *primary school, reading literacy, memory, improvement, learning efficiency.*

Kirish

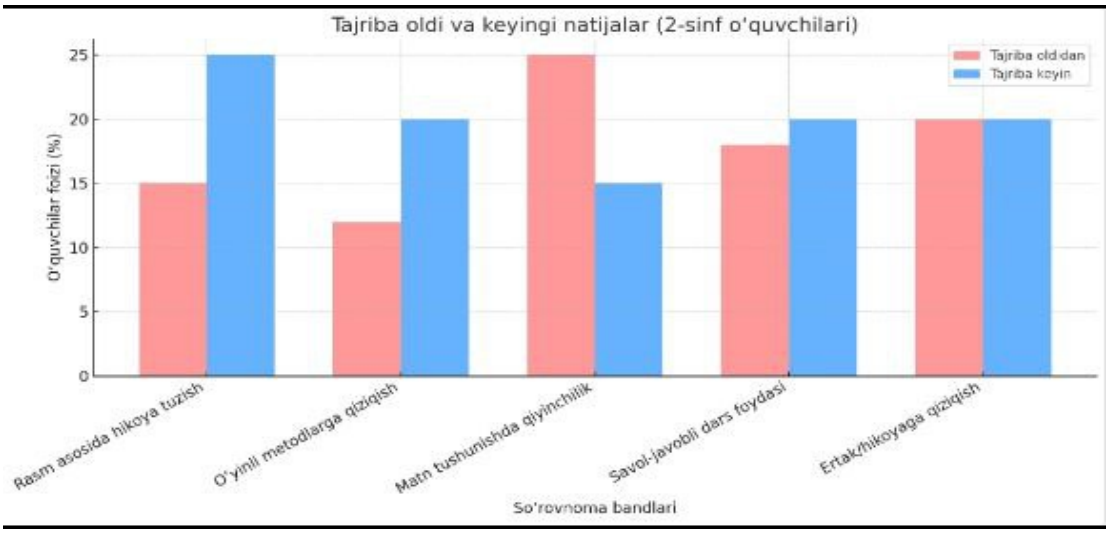
Bugungi globallashuv va raqamli axborot asrida savodxonlik nafaqat shaxsiy taraqqiyotning, balki butun jamiyatning intellektual rivojlanish darajasining mezoni sifatida qaralmoqda. Ayniqsa, boshlang‘ich sinf o‘quvchilarining o‘qish savodxonligi zamonaviy ta’lim tizimining poydevoriy vazifasi bo‘lib, o‘quvchining keyingi bosqichlardagi muvaffaqiyatini belgilab beradi. Boshlang‘ich ta’lim bosqichida o‘quvchilarning savodxonligini shakllantirishda an’anaviy yondashuvlar bilan bir qatorda ilg‘or pedagogik texnologiyalar, innovatsion yondashuvlar va integratsiyalashgan metodlarning samarali kombinatsiyasi muhim ahamiyat kasb etadi. Afsuski, amaliyotda ko‘plab o‘quvchilar matnni mexanik o‘qiydi, ammo uni tushunish, asosiy g‘oyani ajratish va fikr bildirishda qiynaladi. Bunday holatni bartaraf etish uchun o‘qituvchidan yangicha yondashuv, kreativlik va faol o‘quv muhiti yaratish talab qilinadi.

Metadologiya

Ushbu tadqiqot Toshkent shahar Shayxontohur tumani 40 - sonli umumiy o‘rta ta’lim maktabining 2-sinf o‘quvchilari ishtirokida 2025-yil yanvar - mart oylarida amalga oshirildi. Tadqiqotda 25 nafar o‘quvchi, 1 nafar sinf rahbari qatnashdi. Ilg‘or pedagogik texnologiyalar asosida tashkil etilgan ushbu tadqiqot tajriba-sinov shaklida olib borildi. Maqsad - o‘quvchilarda o‘qish savodxonligini rivojlantirishga xizmat qiluvchi metodlarni amaliyotga tadbiq etish, ularning samaradorligini baholash va takomillashtirish yo‘llarini aniqlashdan iborat bo‘ldi. Tadqiqot quyidagi uch bosqichda amalga oshirildi:

1. Boshlang‘ich diagnostika bosqichi: O‘quvchilarning mavjud savodxonlik darajasi aniqlanib, asosiy muammolar aniqlashtirildi. Matnni tushunish, qayta hikoya qilish, savolga javob berish, so‘z boyligi va ifodali o‘qish malakalari maxsus testlar va kuzatuvlar asosida baholandi.

2. Tajribaviy-amaliy bosqich: Ushbu bosqichda o‘qish darslarida quyidagi metodlar qo‘llanildi: “Qayiqcha” metodi: O‘quvchilar matndan asosiy fikr, qahramon va voqeani “qayiq” shaklidagi qog‘ozlarga yozadilar. Bu qayiqlar “bilim daryosi” devoriga yopishtirilib, har dars yakunida tahlil qilinadi. Eng faol qatnashganlar yulduzcha bilan rag‘batlantiriladi. “Savol-daraxti” yondashuvi: O‘quvchilar matn asosida daraxt shaklida savollar yaratadi. Har bir bo‘lim ma’lum bir maqsadga xizmat qiladi: ildiz – sabab, poya – voqea, shox – detallar, barg – xulosa. Bu metod fikrlashni rivojlantirishga xizmat qildi.



Xulosa

Tadqiqot jarayonida 2-sinf o‘quvchilarining o‘qish savodxonligini rivojlantirishda samarali metodlarni qo‘llash o‘quvchilarda mustaqil fikrlash, tushunganini ifodalash va kitobga mehr uyg‘otishda muhim vosita bo‘lishi aniqlandi. Takomillashgan “Qayiqcha” metodi orqali o‘quvchilar matnning asosiy mazmunini qisqa va aniq bayon eta oldilar. “Savol-daraxti” yondashuvi esa ularning tahliliy va tanqidiy fikrlash ko‘nikmalarini shakllantirishga xizmat qildi. Shuningdek, “Kitobxonlik — buyuk kelajagimiz kafolati” marafoni orqali o‘quvchilarda o‘qishga bo‘lgan ijobiy munosabat mustahkamlandi, mustaqil kitob o‘qish odati shakllandi, nutqiy faollik kuchaydi va xotira sezilarli darajada rivojlandi. O‘quvchilarda savodxonlikni rivojlantirish uchun faqat an’anaviy metodlar bilan cheklanmasdan, ularni interfaol va ijodiy metodlar bilan boyitish lozim.

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QUANTITATIVE DETERMINATION METHODS FOR LEVOCARNITINE IN PHARMACEUTICAL SOLUTIONS

Introduction. Levocarnitine, the biologically active L-isomer of carnitine, plays a critical role in mitochondrial energy metabolism by facilitating the transport of long-chain fatty acids into the mitochondrial matrix for β-oxidation. It is naturally synthesized in the human body from lysine and methionine, primarily in the liver and kidneys. Clinically, levocarnitine is used as a therapeutic agent to treat primary and secondary carnitine deficiency, particularly in patients undergoing hemodialysis, with cardiovascular complications, or metabolic disorders. Given the importance of accurate dosing in such conditions, the development of reliable and precise analytical methods for its quantification in injectable or oral pharmaceutical forms is essential. This review provides a comprehensive overview of various methods employed for the quantitative determination of levocarnitine in pharmaceutical solutions, evaluating their operational principles, strengths, and limitations.

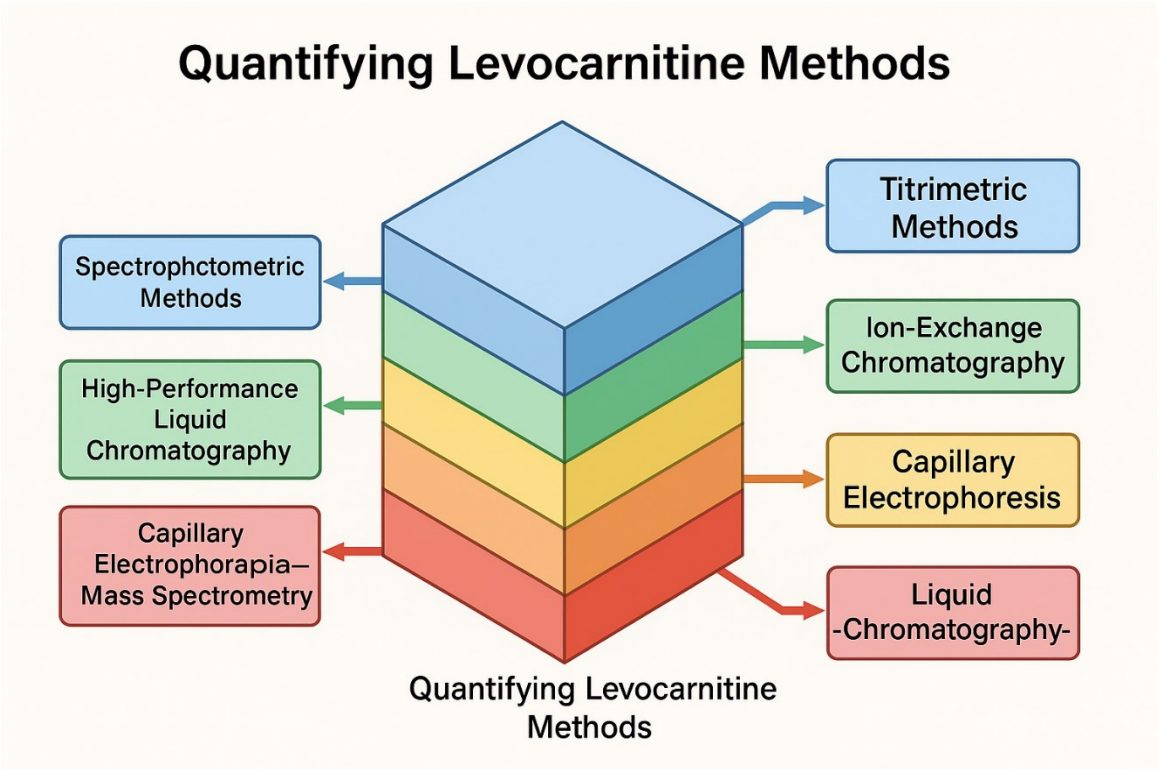
Spectrophotometric Methods. Direct UV spectrophotometric determination of levocarnitine poses challenges due to its lack of a strong chromophore absorbing in the UV-visible range. To overcome this limitation, derivatization strategies are employed, wherein levocarnitine is chemically modified using reagents like ortho-phthalaldehyde (OPA) or 2,4-dinitrophenylhydrazine (DNPH) to form chromogenic or fluorogenic derivatives detectable at specific wavelengths. These methods are relatively simple and cost-effective, making them accessible to basic laboratory setups. However, derivatization introduces additional steps that can increase variability and require optimization of reaction conditions. Furthermore, the sensitivity and selectivity of these techniques are generally lower compared to more advanced instrumental approaches.

Titrimetric (Volumetric) Methods. Titrimetric analysis is one of the classical methods used for the quantification of levocarnitine, exploiting its weakly basic nature. Typically, acid-base titrations are performed where levocarnitine acts as a base and is titrated with standardized acids, such as HCl, using indicators like methyl orange or potentiometric detection for endpoint determination. These methods are particularly suitable for routine quality control in low-resource settings due to their simplicity and minimal equipment requirements. Despite these advantages, titrimetric methods often suffer from lower specificity and accuracy, especially in the presence of excipients or structurally similar amino compounds. They are best suited for preliminary quantification rather than high-precision pharmaceutical analysis.

High-Performance Liquid Chromatography (HPLC). High-performance liquid chromatography (HPLC) is widely regarded as the gold standard for the quantitative analysis of levocarnitine in pharmaceutical preparations. Owing to its high resolution, sensitivity, and reproducibility, HPLC allows precise separation and quantification of levocarnitine even in complex matrices. Typically, reversed-phase columns such as C18 are employed, and mobile phases consist of phosphate buffers in combination with organic solvents like acetonitrile or methanol. Detection can be achieved through UV, refractive index, or mass spectrometry depending on sensitivity needs. Pre-column derivatization may be applied to enhance UV absorption. While HPLC provides superior analytical performance, it requires costly instrumentation, skilled personnel, and regular calibration and maintenance, making it more suitable for industrial and research laboratories.

Ion-Exchange Chromatography. Ion-exchange chromatography leverages the ionic nature of levocarnitine, a zwitterionic compound, for its selective separation. Cation-exchange resins are commonly used under acidic or neutral pH conditions to retain positively charged carnitine molecules. The elution is typically monitored using conductivity or suppressed conductivity detectors. This method demonstrates good selectivity and is especially beneficial in separating ionic impurities or counterions in formulations. However, the method is less prevalent due to the need for specialized columns and detectors, and it may not be suitable for formulations with complex excipient backgrounds without thorough method optimization.

Liquid Chromatography – Mass Spectrometry (LC-MS/MS). Among the most advanced analytical approaches for levocarnitine quantification is LC-MS/MS, which combines the separation capabilities of HPLC with the ultra-sensitive and selective detection of tandem mass spectrometry. This method is



particularly advantageous in pharmacokinetic studies and bioequivalence trials where trace-level quantification in biological fluids such as plasma or urine is necessary. The technique enables unequivocal identification and quantification of levocarnitine even in the presence of endogenous compounds and metabolites. Despite its unmatched performance, LC-MS/MS is associated with high operational costs, complex sample preparation, and the need for experienced analysts, which may restrict its application to specialized laboratories.

Conclusion. Quantitative determination of levocarnitine in pharmaceutical solutions is a crucial component of drug quality assurance and regulatory compliance. The analytical landscape offers a range of techniques, from classical titrimetric approaches to cutting-edge chromatographic and spectrometric technologies. Each method carries inherent advantages and limitations, making method selection a context-driven decision. HPLC remains the most robust and widely adopted technique, while LC-MS/MS is indispensable for bioanalytical applications requiring high sensitivity. Future research may focus on developing greener, miniaturized, and automation-friendly methods to enhance efficiency and sustainability in levocarnitine analysis.

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ANALYTICAL METHOD DEVELOPMENT FOR PHARMACEUTICAL SOLUTIONS

Abstract. *Quantitative analysis of pharmaceutical solutions is a cornerstone of drug development, quality control, and regulatory compliance. The reliable measurement of active pharmaceutical ingredients (APIs) in liquid dosage forms ensures therapeutic efficacy, patient safety, and product consistency. This review presents an in-depth exploration of classical and modern analytical techniques used for the quantitative determination of drugs in solutions. It also outlines systematic approaches to method development, discusses critical validation parameters, and evaluates recent technological advancements, including green chemistry and AI-assisted platforms. The goal is to highlight the evolving landscape of analytical method development for pharmaceutical solutions and propose best practices for method optimization and standardization.*

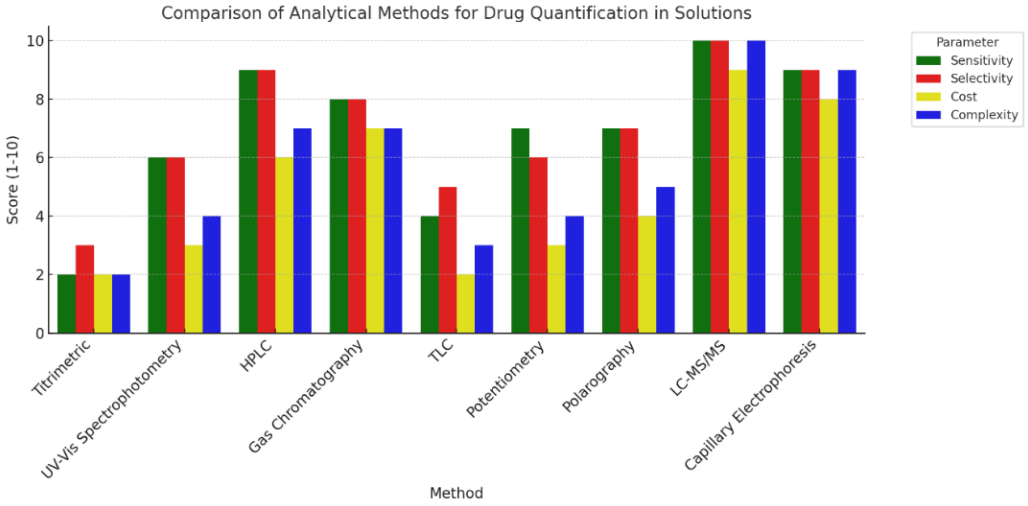
Key words: *Method validation, UV-Vis spectroscopy, Titrimetry, Specificity, Accuracy, Robustness*

Introduction. Pharmaceutical solutions represent a critical segment of dosage forms due to their rapid bioavailability, ease of administration, and suitability for patients with swallowing difficulties. These include injectables, ophthalmic drops, oral syrups, and intravenous infusions. Unlike solid dosage forms, solutions present fewer challenges in uniformity but are more sensitive to degradation and contamination. Therefore, precise and validated analytical methods are essential for monitoring the concentration of APIs and ensuring product quality throughout manufacturing and shelf life.

Analytical method development is not only a regulatory requirement but a scientific discipline that involves the integration of chemistry, instrumentation, and quality control. The choice of analytical technique depends on the drug's physicochemical characteristics, the matrix complexity, and the required sensitivity

Classical analytical methods, such as titrimetry and gravimetry, have long been foundational in pharmaceutical analysis due to their simplicity, affordability, and minimal instrumentation requirements. Titrimetric methods, including acid-base, redox, and complexometric titrations, are particularly effective for single-component systems with well-defined reactive groups. However, these techniques suffer from several limitations: they lack the sensitivity and specificity needed for trace-level or multi-component analysis, are often affected by the presence of interfering excipients, and typically require manual endpoint detection, which introduces subjectivity and reduces reproducibility. Consequently, while classical methods remain useful for routine assays and educational purposes, they are increasingly being replaced by more advanced instrumental techniques in modern pharmaceutical laboratories.

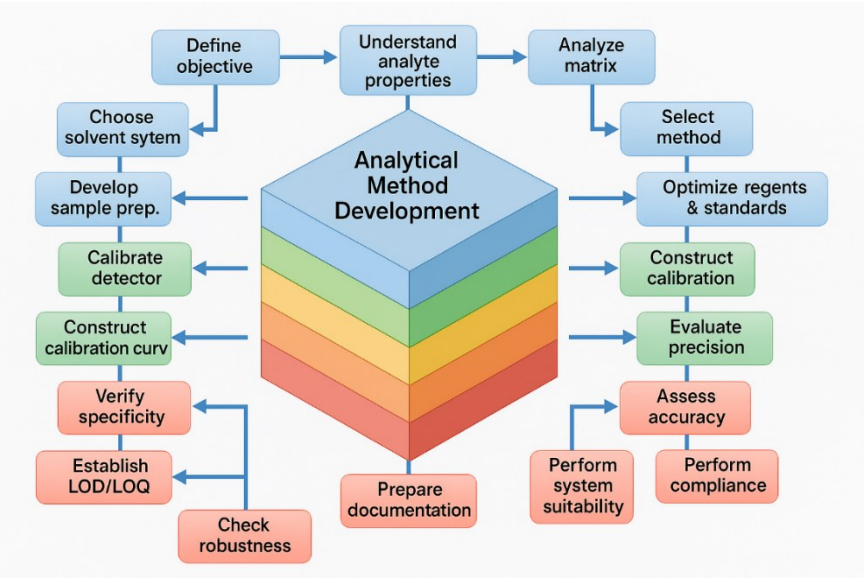
Modern analytical methods have revolutionized pharmaceutical analysis by offering enhanced sensitivity, selectivity, and automation capabilities, making them



indispensable in quality control, stability testing, and regulatory compliance. Techniques such as High-Performance Liquid Chromatography (HPLC), Liquid Chromatography–Mass Spectrometry (LC-MS/MS), Capillary Electrophoresis (CE), and advanced spectroscopic methods like Fourier-transform infrared (FTIR) and Nuclear Magnetic Resonance (NMR) spectroscopy allow for precise quantification and identification of drug substances even in complex matrices. These methods support trace-level detection, high-throughput screening, and robust separation of closely related compounds. Furthermore, innovations such as hyphenated techniques (e.g., HPLC-MS), green analytical chemistry (which reduces solvent and waste usage), and artificial intelligence-assisted optimization are streamlining method development and validation. Despite requiring sophisticated equipment and expertise, these modern approaches are critical for ensuring the efficacy, safety, and compliance of pharmaceutical products in line with international standards.

The strategy for analytical method development begins with clearly defining the objective—whether it is for assay, content uniformity, or dissolution testing—followed by a thorough understanding of the analyte's physicochemical properties such as pKa, solubility, and UV absorbance. Analyzing the sample matrix helps

identify potential interferences that may affect accuracy. Based on this, the most appropriate method is selected from titrimetry, spectroscopy, chromatography, or electrochemical techniques, taking into account the availability of instruments and



laboratory capabilities. The choice of solvent system is crucial to ensure analyte stability and compatibility. Standardized procedures for sample preparation, such as filtration, dilution, or derivatization, must be developed alongside selecting high-purity reagents and certified reference standards. If UV-Vis spectroscopy is used, an optimal detection wavelength should be identified, while HPLC methods require fine-tuning of mobile phase composition, column type, flow rate, and temperature. Calibration curves are constructed over a suitable concentration range to assess linearity. Precision is evaluated through intra-day and inter-day reproducibility, while accuracy is tested via recovery studies. Specificity ensures that the method can differentiate the analyte from excipients and degradants. Detection and quantification limits are established using standard deviation or signal-to-noise ratios. Robustness is checked by varying method parameters slightly to ensure stability, and system suitability testing confirms instrument performance through metrics like resolution and peak symmetry. To guarantee broader applicability, method transferability is tested across analysts and labs. Finally, detailed documentation, including SOPs and validation protocols, is compiled to comply with regulatory standards such as ICH Q2(R1), USP, and Ph. Eur., ensuring the method is reliable, reproducible, and compliant for routine pharmaceutical use.

Conclusion. The development of analytical methods for quantifying drugs in solutions remains a fundamental aspect of pharmaceutical analysis. A successful method must be scientifically justified, rigorously validated, and aligned with international regulatory standards. The incorporation of modern technologies and sustainable practices continues to enhance the efficiency, reliability, and environmental compatibility of pharmaceutical analysis.

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PSYCHOLOGICAL PREPARATION IN IMPROVING THE TECHNICAL AND TACTICAL SKILLS OF WRESTLERS

Annotation: *Psychological preparation of wrestlers in improving their technical and tactical skills. Improving technical and tactical skills is inseparable from psychological preparation. The reliability of a wrestler's tactical actions is ensured by his emotional shell and level of knowledge. Perfect study of technical and tactical actions develops tactical thinking, coordination, speed and sensitivity.*

Keywords: *wrestling, perfection, technique, tactics, sport, psychological, speed, victory, skill.*

Improving technical and tactical skills is inseparable from psychological preparation. The reliability of a wrestler's tactical actions is ensured by his emotional shell and level of knowledge. Perfect study of technical and tactical actions develops tactical thinking, coordination, speed and sensitivity.

A tactical decision is a product of the wrestler's thinking activity. The wrestler uses images of a tactical situation and makes decisions according to the principle of "agreed" and "not agreed". Psychological preparation serves as the basis for the general training system. Physical preparation, in turn, is a kind of foundation for improvement, and technical and tactical preparation is a means of realizing the athlete's physical and psychological capabilities.

The ability to make a choice and the speed of implementing the decision made are the most important aspects of a wrestler's psychological preparation.

Psychological preparation should take into account the wrestler's ability to make the right decision in various competition situations.

Thus, the upbringing of a psychological orientation aimed at activating actions in wrestlers is an extremely important aspect. Knowing the favorable dynamic situations that arise during the competition, being ready to perform technical movements and attacks in a timely manner, reflects only one aspect of the psychological orientation. In order to educate a highly qualified modern wrestler, the psychological orientation to prepare and use a favorable dynamic situation must be based on good physical and technical preparation, that is, the wrestler must be ready for continuous active movements throughout the competition.

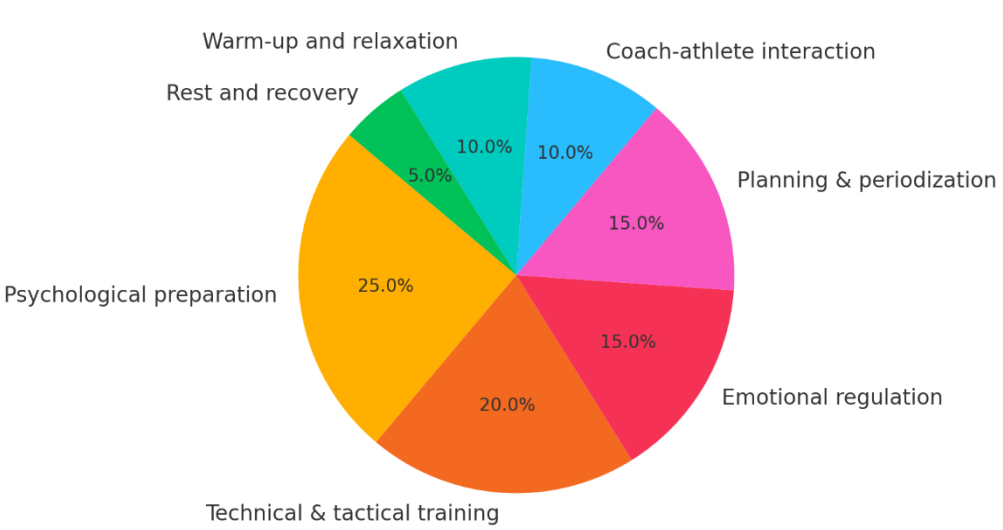

Fig.1. Here is the thematic diagram illustrating the main focus areas in the psychological preparation of wrestlers.

The athlete's ability to correctly and timely prepare for the upcoming competition in a highly emotional mood, taking into account the strengths and weaknesses of his opponent, is of great importance for winning. Only with the help of a great spirit can one develop strength to the maximum.

The increasing competition in sports competitions places great demands on athletes not only their physical and technical preparation, but also their ability to manage their emotional state in the conditions of responsible competitions.

The tense situation at the championship, negative emotions, numerous objective and subjective obstacles that arise during the competition can become a powerful factor that significantly reduces technical and tactical skills for some young wrestlers.

Special studies allow us to observe changes in the level of emotional excitement of wrestlers on the eve of the competition, emotional tension during the competitions (waiting for the result of the draw, the first match with the opponent, etc.).

A significant increase in excitement is observed in wrestlers while waiting for the results of the draw, and a significant decrease after the results are announced.

This was especially noticeable in wrestlers who had to compete with weaker opponents in the first round of the competition.

Athletes who had to meet their main opponents in the first round also experienced increased excitement. The level of excitement was monitored by psychologists using methods such as measuring blood pressure and the Moving Object Reaction (MOR) index.

The ability of wrestlers to control their emotional state during competitions reduces the impact of negative emotions on the fighting spirit and allows them to achieve high sports results.

Many strong wrestlers prepare for a competition using the concepts of self-command and self-assurance. One of the most important tools for improving movement and functional capabilities and regulating the level of excitement before a competition is warm-up exercises.

Our leading wrestlers conduct short warm-up exercises before several pairs go on the mat, which consist of performing their favorite techniques through gestures, self-assurance, and self-command. In this way, they prepare for the upcoming competitions and increase their sense of excitement. Warm-up exercises, which consist of performing intense, exciting, technical movements through gestures, increase the level of emotional excitement of the wrestler.

Long-term, but less intense warm-up exercises, combined with the use of self-assurance techniques, calm the wrestlers and save their nervous energy. Speech is a highly effective regulator of the athlete's neuro-psychological state. Each coach must have the ability to adequately control the athlete's state: before competing with an opponent, the athlete must calm down if he becomes excited prematurely, so that he does not get too excited.

When using various methods of influencing with the help of speech - persuasion, explanation, lecturing, it is necessary to take into account the wrestler's higher nervous activity.

Amateur concerts prepared by athletes are of great importance in relieving psychological stress and psychological relaxation of wrestlers.

All of the above methods help to have a good rest and create calm conditions for the wrestler's intense work before responsible competitions. The wrestler needs to increase his emotional state only before the competition.

Each coach must be a psychologist to a sufficient degree, have the ability to understand the thoughts and emotions of athletes, and be able to manage their condition in the conditions of intense training, competitive activity.

Words have a great influence on the psychological state and activity of athletes at a high level. Only with the correct use of words and an individual approach to each athlete can the coach-wrestler system be successfully implemented. The wrestler is the basis of this system.

Considering the psychological and pedagogical means of management implemented by the coach, we see that the main ones are: persuasion, explanation and instillation. Their use in a state of alertness as psychological therapy implies, first of all, the verbal influence of the coach, doctor, psychologist, leader.

The use of psychological and pedagogical means and recovery methods in different periods of preparation solves various tasks.

Planning the wrestlers' rest and leisure should be connected with the dynamics of training and the implementation of a complex of cultural-mass, socio-political and psychological therapeutic measures.

Conducting individual and group conversations before going to bed gives a high psychotherapeutic effect. The topic of the conversations is selected depending on the stage of preparation and the condition of the athletes.

The psychologist, coach and doctor use "psychological observation" in the process of the conversation to form their own views, with the help of which they receive daily information about the neuro-psychological state of a particular wrestler.

While convincing the wrestlers, it is necessary to criticize some aspects of their behavior and concerns on a reasonable basis. In this case, positive emotions arise in the wrestlers due to the confidence in improving their condition and achieving high results.

Another important task of the coach and doctor is to normalize and smooth out the relationships of the wrestlers in their personal, social and sports activities, in conflict situations.

When psychological and pedagogical methods are used in combination with physiotherapeutic effects, massage, sauna and music, their restorative effect is significantly enhanced.

Organizational, socio-political and cultural-mass events have a calming effect on the psyche of wrestlers. Holding organizational meetings to set tasks and give instructions before directly responsible competitions is not justified.

The main task of psychological and pedagogical tools on the first day of the competitions is to maintain the nervous energy of wrestlers. For this, both collective and individual management tools should be used.

It should be borne in mind that not everyone can become a coach-psychologist. In this work, a high level of sports culture, experience and knowledge, calmness, self-control, the ability to think, and not lose oneself in difficult situations during competitions are of great importance. The coach must clearly know that “in order to know how to manage someone, first of all, one must know how to manage oneself”.

Planning a sports training session is a preliminary foresight of the conditions, means and methods of solving the tasks of sports training, the sports results that the athlete must achieve. Proper planning of athletes’ training is based on an analysis of the characteristics of this contingent of athletes (or one athlete), determining the main indicators in the training process and distributing them over time.

Recently, the concept of planning the training process in sports wrestling has changed significantly. This is due to the introduction of some changes to the competition rules and the requirements of the International Wrestling Federation to increase the spectacle of competitions.

Currently, objective conditions have been created for a higher level of quality planning of athletes' training, which has set a large experimental task.

Successful management of the process of training athletes requires taking into account two important conditions: firstly, a sharp increase in the volume and intensity of loads (in modern high-performance sports, loads are approaching the limits of biological norms); secondly, the equalization of the numerical parameters of training and the level of skill (in the experience of leading world athletes). Therefore, optimizing the structure of training and creating optimal training programs remains of paramount importance. Planning the training process is, first of all, the creation of a system of plans for different periods. During these periods, a complex of interrelated goals should be implemented.

Training (training) is an elementary component of the training process. A training day is formed from individual training sessions, from which a microcycle is formed, the union of several microcycles forms a new, relatively independent, integral part of the training process - a mesocycle.

The union of several mesocycles forms a larger and relatively complete structure - a macrocycle. Depending on the division of training into periods such as micro-, meso- and macrocycles, the size, volume, intensity, means of preparation and methods of training change.

When drawing up a plan for the long-term training of wrestlers, it is necessary to proceed from the forecast of the development of sports wrestling and changes in the rules of competitions. Therefore, it is necessary to take into account the change in the tasks of training, the volume and intensity of training.

Prospective planning of training necessarily requires the development of annual plans. Annual plans include a detailed description of the tools and training loads used. Daily planning uses scientific laws of sports form dynamics (emergence, stabilization and temporary decline). The structure of daily planning is influenced by various factors: the mode of study and work, the content, number and total size of training loads, the individual characteristics of the reaction to training loads, and the skills of wrestlers.

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APPROACHES TO THE EVALUATION OF THE TOURISTIC POTENTIAL OF THE REGIONS

Abstract. *This article analyzes modern approaches to assessing the tourism potential of regions. The tourism sector can have a significant impact on the economic and social development of each region. The article analyzes the assessment criteria, methodological approaches, and foreign experience used in the field, and puts forward proposals for the formation of an effective assessment system.*

Keywords: *tourism potential, regional development, infrastructure, tourism resources, assessment criteria, methodology, economic impact.*

Introduction. Today, tourism is becoming one of the most important sectors of the global economy. The tourism industry not only brings economic benefits, but also strengthens cultural ties between regions, creates new jobs and serves the development of infrastructure. The tourism potential of each region depends on its geographical location, natural resources, historical and cultural monuments, level of service and transport links. An accurate and objective assessment of tourism potential plays an important role in correctly defining regional development strategies. From this point of view, studying and improving approaches to assessing the tourism potential of regions is an urgent issue.

Analysis and results. It is known from world experience that the economies of developing countries have great potential and opportunities for development in a short period of time due to the tourism sector. Our country, which has great tourism potential, also has a high chance of achieving macroeconomic stability and development based on this potential.

The use of economic assessment is of great importance in the formation of methodological approaches to the comprehensive assessment of the tourist and recreational potential of regions. Economic assessment of existing tourist and recreational resources serves as the basis for determining the potential from the point of view of the efficiency of using the available resources of the region. This helps to identify the real and potential opportunities of the region.

Current economic development programs, including sectoral programs for tourism development, are based on the principles of clustering. Regional groups seek to increase the synergistic effect by stimulating innovations, developing new tourist destinations, and ensuring the more effective work of all cluster members. The economic assessment of the effectiveness of the use of the recreational and touristic potential of the regions is carried out in order to analyze and evaluate the socio-economic indicators describing the level of use of the touristic-recreational potential and the parameters of the investment program for the development of tourism in the regions.

Methodological rules for the assessment of economic conditions in the regions allow to determine the importance and effectiveness of the use of recreation and tourism potential, the effectiveness of the measures taken in the tourism development program in the region, which is of practical importance in the development of recreation and tourism management programs.The development and effectiveness of the recreational services market in Uzbekistan can be assessed by the increase in the number of vacationers in it.

Before studying the impact of factors on the development of the recreational services market in Uzbekistan, a SWOT analysis was conducted to assess its status, which helps to identify the strengths, weaknesses, existing opportunities and threats of the market (Table 1).

Table 1.

SWOT analysis of the recreational services market in Uzbekistan

Strengths	**Weaknesses**
1. High geographical and natural potential of the territories where recreational facilities are located; 2. Availability of residential premises for clients within the recreational facilities; 3. Availability of various cultural, household and leisure services at recreational facilities; 4. Availability of growing real demand for the use of recreational services; 5. Availability of specialists in the areas of service in institutions and enterprises offering recreational services.	1. Non-utilization of existing high potential; 2. Non-compliance of accommodations in recreation facilities with international requirements; 3. Lack of information about existing recreation facilities and services that can be used in them; 4. Inadequate formation of necessary infrastructures and clusters and low level of service quality in the areas where facilities offering recreational services are located.
Opportunities	**Risks**
1. The trend of developing domestic and foreign tourism for the socio-economic development of Uzbekistan; 2. Increasing the investment attractiveness of the recreational tourism sector; 3. Opportunities for expanding the base of recreational services; 4. The possibility of creating new jobs through the launch of new capacities and the formation of clusters.	1Changes in the state's economic policy related to the recreational services market; 2. Competition with leading tourism enterprises in the international market as a result of integration into international information systems; 3. Distribution of services and income among competitors as a result of the emergence of competitors.

Each group of factors of the SWOT analysis directly affects the development of the situation in the recreational services market. Of course, the situations located in each section of the SWOT analysis matrix determine the changes proportionally to the name of the section.

In the process of economic development of countries of the world in recent years, the development of individual sectors or industries based on a cluster approach requires research within the framework of the current situation when considering the issue. Taking this into account, the development of the service market based on the formation of clusters of recreational services is recognized as a promising direction as one of the directions for the effective use of tourist and recreational facilities in the regions of our country.

A structural analysis of the current state of the recreational services market shows that most of the enterprises in this system are not organized in the form of clusters, or rather, the services formed around the main services are formed independently and spontaneously, based on demand. This is because the infrastructure systems formed around all recreational facilities are formed in the form of separate, non-interacting and non-systemic structures. The fact that these structures do not connect their capabilities to the main service capabilities, on the one hand, leads to their operation in a partially ambiguous market, and on the other hand, as a result of interruptions in the satisfaction of the demand of vacationers for these products and services, the level of "attractiveness" of enterprises offering recreational facilities services decreases.

Suggestions and conclusions. A structural study of the current state of the recreational services market shows that most of the enterprises in this system are not organized in the form of clusters, or rather, the services formed around the main services are formed independently and spontaneously, based on demand.

1. Development of unified assessment criteria: In order to accurately assess the tourism potential of regions, it is necessary to introduce a unified and standardized system of criteria. These criteria should include factors such as natural resources, cultural heritage, infrastructure, logistics capabilities, and service quality.

2. Use of geoinformation technologies: Through the effective use of GIS (geoinformation systems) technologies in assessing the tourism potential of regions, visual maps, statistical analyses, and forecasts can be prepared.

3. Taking into account the opinions of the local population: In the process of tourism development, communication with the local population, taking into account their needs and opinions, is an important factor in assessing social impact.

4. Introducing economic efficiency analysis: When assessing tourism potential, it is necessary to analyze not only reserves, but also indicators such as the economic benefits of tourism activities, jobs created, and contribution to the regional budget.

5. Introducing international experience: By studying the methodologies used in foreign countries for assessing tourism potential and adapting them to local conditions, a scientifically based approach can be formed.

Conclusion. Assessing the tourism potential of regions is not just a list of existing resources, but also a process of determining to what extent they can be used effectively in economic, social and environmental terms. This assessment process requires a scientifically based, comprehensive and systematic approach. An accurate assessment of tourism potential serves as an important basis for determining a regional development strategy, attracting investments and developing tourism infrastructure. Therefore, it is an urgent task to take practical measures in this area at the national and regional levels, and to develop and introduce highly effective assessment tools.

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KATTA MA’LUMOTLAR BAZASIDA QIDIRUV JARAYONINI TASHKIL ETISHDA NEYRON TARMOQLARIDAN FOYDALANISH

Annotatsiya. *Katta ma’lumotlar (Big Data) zamonaviy texnologiyalarning eng muhim yo‘nalishlaridan biri hisoblanadi. Ularning tezkor tahlili va qidiruv jarayonlarini takomillashtirishda neyron tarmoqlar muhim ahamiyat kasb etadi. Mazkur maqolada katta ma’lumotlar bazasida qidiruv jarayonini avtomatlashtirishda sun’iy neyron tarmoqlarining o‘rni, ularning afzalliklari va qiyinchiliklari tahlil qilinadi. Shuningdek, qidiruv natijalarining sifatini oshirish uchun qo‘llaniladigan matematik modellar ko‘rib chiqiladi.*

Kalit so‘zlar: *katta ma’lumotlar, sun’iy intellekt, neyron tarmoqlar, ma’lumotlarni tahlil qilish, intellektual qidiruv.*

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USE OF NEURAL NETWORKS IN ORGANIZING THE SEARCH PROCESS IN BIG DATABASES

Abstract. *Big data is one of the most important areas of modern technologies. Neural networks play an important role in ensuring their rapid analysis and useful processes. In this regard, the use of artificial neural networks in automating the production process in a big database, analysis of documents and products. from, mathematical models are considered to ensure the safety of the result.*

Keywords: *big data, artificial intelligence, neural networks, data analysis, intelligent intelligence.*

Katta ma’lumotlar bazalari zamonaviy jamiyatning muhim qismidir. Mazkur ma’lumotlar miqdorining keskin ortishi samarali va aniq qidiruv algoritmlarini talab

qiladi. Neyron tarmoqlar sun’iy intellekt texnologiyalari asosida ishlab chiqilgan bo‘lib, ular katta ma’lumotlar bazasidagi tendensiyalarni aniqlash, ma’lumotlarni tasniflash va qidiruv jarayonini samarali tashkil etishga xizmat qiladi. Ushbu maqolada mazkur texnologiyalarning asosiy matematik modellari va ularning qidiruv tizimlariga ta’siri tahlil qilinadi.

Neyron tarmoqlarning matematik asoslari

Neyron tarmoqlar (Neural Networks) inson miyasidagi neyronlarning ishlashiga asoslangan sun'iy intellekt texnologiyasidir. Ular ma’lumotlardan murakkab naqshlarni ajratib olish, tasniflash va bashorat qilish qobiliyatiga ega. Neyron tarmoqlarining matematik asoslari quyidagilardan iborat:

Neyron Modeli: Har bir neyron kirish ma’lumotlarini qabul qiladi, ularni og‘irliklar bilan ko‘paytiradi va aktivatsiya funktsiyasi orqali chiqishni hisoblaydi. Matematik jihatdan:

$$y = f\left(\sum_{i=1}^{n} w_i x_i + b\right) \qquad (1)$$

Bu yerda:
y: Neyronning chiqishi,
f: Aktivatsiya funktsiyasi (masalan, sigmoid, ReLU),
w_i: Og‘irliklar,
x_i: Kirish ma’lumotlari,
b: Bias (siljish).

Qaytarilgan xato tarqatish algoritmi (Backpropagation): Neyron tarmoqlarini o‘qitish uchun ishlatiladigan algoritm. Xatolik funktsiyasini minimallashtirish uchun gradient tushish usuli qo‘llaniladi

$$w_{ij} = w_{ij} - \eta \frac{\partial E}{\partial w_{ij}} \qquad (2)$$

Bu yerda:
η: O‘rganish tezligi,
E: Xatolik funktsiyasi.

Katta ma’lumotlar bazasida qidiruv jarayoni

Katta ma’lumotlar bazasida qidiruv jarayoni quyidagi bosqichlardan iborat:

1. **Ma’lumotlarni yig‘ish**: Sensorlar, ijtimoiy tarmoqlar, log fayllar va boshqa manbalardan ma’lumotlar yig‘iladi.
2. **Ma’lumotlarni saqlash**: Yig‘ilgan ma’lumotlar, ma’lumotlar omborlarida saqlanadi. Bu jarayon NoSQL, Hadoop kabi texnologiyalar yordamida amalga oshiriladi.
3. **Ma’lumotlarni tahlil qilish**: Neyron tarmoqlari yordamida ma’lumotlardan naqshlar ajratib olinadi va ular asosida qarorlar qabul qilinadi.

Neyron tarmoqlarining qidiruv jarayonidagi rol

Neyron tarmoqlari katta ma’lumotlar bazasida qidiruv jarayonini quyidagi jihatlarda yaxshilaydi:

Tasniflash va tanib olish: Neyron tarmoqlari ma’lumotlarni avtomatik ravishda tasniflash va ularni tanib olish imkoniyatini beradi. Masalan, tasvirlarni tanib olish yoki matnlarni tahlil qilish. Bu jarayon quyidagi matematik modelga asoslanadi:

$$P(y|x) = \frac{e^{z_y}}{\sum_{j=1}^{k} e^{z_j}} \qquad (3)$$

Bu yerda:

- $P(y|x)$: Kirish ma’lumoti x uchun y sinfining ehtimoli,
- z_j: Chiqish qatlamidagi j-neuronning qiymati.

Bashorat qilish: Ma’lumotlardagi naqshlar asosida kelajakdagi hodisalarni bashorat qilish mumkin. Bu korporativ sohalarda va ilmiy tadqiqotlarda katta ahamiyatga ega. Masalan, vaqt seriyalarini tahlil qilish uchun LSTM (Long Short-Term Memory) tarmoqlari qo‘llaniladi:

$$h_t = \tanh(W_h h_{t-1} + W_x x_t + b) \qquad (4)$$

Bu yerda:

h_t: t-dagi yashirin holat,

W_h, W_x: Og‘irlik matritsalari,

b: Bias.

Shaxsiylashtirilgan qidiruv: Neyron tarmoqlari foydalanuvchilarning qidiruv tarixi va xohish-istaklarini tahlil qilib, shaxsiylashtirilgan natijalarni taqdim etadi. Bu jarayon quyidagi optimallashtirish masalasiga asoslanadi:

$$\min_W \sum_{i=1}^{n} (y_i - f(x_i, W))^2 + \lambda \|W\|^2 \qquad (5)$$

Bu yerda:

W: Model parametrlari,

λ: Regularizatsiya parametri.

Neyron Tarmoqlarining Afzalliklari

Tezlik va samaradorlik: Neyron tarmoqlari katta hajmdagi ma’lumotlarni tez va samarali qayta ishlash imkoniyatini beradi.

Aniqlik: Ma’lumotlardagi nozik naqshlarni aniqlash va ular asosida aniqroq natijalarni taqdim etish.

Avtomatlashtirish: Qidiruv jarayonini avtomatlashtirish orqali inson aralashuvini kamaytiradi va xatolarni minimallashtiradi.

Qiyinchiliklar va Yechimlar

Neyron tarmoqlaridan foydalanishda quyidagi qiyinchiliklar mavjud:

Ma’lumotlar Xavfsizligi: Katta ma’lumotlar bazasida ma’lumotlarning xavfsizligini ta’minlash muhim masaladir. Buning uchun kuchli shifrlash va xavfsizlik protokollari qo‘llaniladi.

Resurslar Talabi: Neyron tarmoqlarini o‘qitish va ishlatish uchun katta hisoblash quvvatlari va resurslar talab qilinadi. Bulutli texnologiyalar va parallel hisoblash usullari bu muammoni yengishga yordam beradi.

Tahlil va natijalar

Neyron tarmoqlari katta ma’lumotlar bazasida qidiruv jarayonini quyidagi jihatlar bo‘yicha yaxshilaydi:

Ma’lumotlarni tasniflash – qidiruv jarayonini avtomatlashtirish uchun ma’lumotlar avtomatik ravishda tegishli toifalarga ajratiladi.

Bashorat qilish – kelajakdagi trendlar va istiqbolli ma’lumotlar oldindan aniqlanadi.

Shaxsiylashtirilgan qidiruv – foydalanuvchi profiliga asoslangan ravishda aniqroq natijalar taqdim etiladi.

Jumladan, quyidagi neyron tarmoq modellari samarali deb topildi:

Konvolyutsion neyron tarmoqlar (CNNs) – tasvir va video qidiruvda qo‘llaniladi.

Long Short-Term Memori (LSTM) – matn va nutqni tanib olishda qo‘llaniladi.

Avtoenkoderlar – ma’lumotlarni qiymatli elementlarini ajratish uchun foydalaniladi.

Xulosa

Neyron tarmoqlari katta ma’lumotlar bazasida qidiruv jarayonini tubdan o‘zgartirib, uni tezroq, aniqroq va samaraliroq qiladi. Ular ma’lumotlarni tahlil qilish, bashorat qilish va shaxsiylashtirilgan qidiruv natijalarini taqdim etish imkoniyatini beradi. Biroq, bu texnologiyadan foydalanishda ma’lumotlar xavfsizligi va resurslar talabi kabi qiyinchiliklar mavjud. Kelajakda neyron tarmoqlarining rivojlanishi bilan katta ma’lumotlar bazasida qidiruv jarayoni yanada takomillashtiriladi va turli sohalarda qo‘llanilishi kengayadi.

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O‘QUV JARAYONIDA XALQ PEDAGOGIKASINING TA’LIM-TARBIYAGA OID ASOSIY G’OYALARIDAN FOYDALANISHNING PEDAGOGIK JIHATLARI

Annotatsiya: *Ushbu maqolada o‘quv jarayonida xalq pedagogikasining ta’lim-tarbiyaga oid asosiy g’oyalaridan foydalanishning pedagogik jihatlari, talabalarni ijtimoiy pedagogik amaliyotga tayyorlashda o‘quv jarayonida, darsdan tashqari mashg’ulotlarda, ma’naviy-ma’rifiy tadbirlarda qo‘llaniladigan ta’lim metodlari aksiologik munosabatlarni rivojlantirish bosqichlarida muhim ahamiyatga egaligi to‘g’risida fikr yuritilgan.*

Kalit so‘zlar: *umuminsoniy qadriyatlar, aksiologik munosabat, qadriyatlar tizimi, faoliyat motivlari, aksiologik mezon, ta’limni insonparvarlashtirish, kasbiy kompetentlik,demokratik tamoyillar, diniy bag’rikenglik, tolerantlik.*

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THE MAIN DIRECTIONS OF IMPLEMENTATION OF SOCIAL PEDAGOGICAL PRACTICE WITHIN THE FRAMEWORK OF PROFESSIONAL AND SOCIAL ACTIVITIES

Annotation*: In this article, it is considered important to clarify the axiological criteria and indicators of professional competence development based on the professional value system and motivations of students of higher educational institutions, to improve the organizational structure and mechanisms of the development of the value system, and to develop creative educational technologies. held.*

Key words*: axiological attitude, value system, activity motives, axiological criterion, humanization of education, professional competence.*

Ijtimoiy pedagogik amaliyotda xalqaro me’yorlar va umume’tirof etilgan tushunchalarni bilish va amaliyotda qo‘llash umuminsoniy qadriyatlarning rivojlanishiga asos bo‘ladi. Bular: demokratik tamoyillar, diniy bag’rikenglik, tolerantlik, turli madaniyatlarga hurmat va boshq. YUNESKO Bosh Assambleyasining 1995 yil 16 noyabrda bo‘lib o‘tgan XXVIII sessiyasida “Bag’rikenglik bo‘lmasa, tinchlik bo‘lmaydi, tinchliksiz esa taraqqiyot va

demokratiya bo‘lmaydi”[61] shiori ostida “Bag’rikenglik tamoyillari deklaratsiyasi” qabul qilingan edi. 1997 yili BMTning Bosh Assambleyasida esa mazkur Deklaratsiya qabul qilingan kun – “Xalqaro diniy bag’rikenglik kuni” deb e’lon qilingan. Ijtimoiy pedagogik amaliyot hozirgi globallashuv jarayonida diniy bag’rikenglik, dinlararo totuvlik, o‘zaro hamkorlik masalasi rivojlangan va rivojlanib borayotgan mamlakatlarning tinchligi, taraqqiyoti uchun yo‘nalgan tamoyillarni tadbiq etadi. Misol tariqasida, bag’rikenglikka zid tushuncha “mutaassiblik”ni keltirish mumkin. Umumiy ma’noda “mutaassiblik” bu bir g’oyaning to‘g’riligiga qattiq ishonish va undan o‘zgalarni keskin rad etishni anglatadi. Ijtimoiy pedagogik amaliyot mazmunining to‘g’ri va o‘z vaqtida tashkil etilmasligi natijasida fenomenning xavfli jihatlari namoyon bo‘ladi va borgan sari kuchayib ksenofobiya, ekstremizm va xatto terrorizmga aylanadi.[62]

Oliy ta’lim muassasalarida talabalarni ijtimoiy pedagogik amaliyotga tayyorlashda o‘quv jarayonida, darsdan tashqari mashg’ulotlarda, ma’naviy-ma’rifiy tadbirlarda qo‘llaniladigan ta’lim metodlari aksiologik munosabatlarni rivojlantirish bosqishlarida muhim ahamiyatga ega. Bulardan ba’zi birlarini keltirib o‘tamiz.

Suhbat – axloqiy qadriyatlarni shakllantirishda muhim ahamiyat kasb etuvchi ta’lim-tarbiya metodlaridan biri bo‘lib, unda boshlovchi va tinglovchilarning bir xil tarzda ishtiroki talab etiladi. Suhbat jarayonida ikki tomonlama muloqot kechib, bu jarayonda tinglovchilar boshlovchi savollariga javob ham berishadi, ham o‘zlari unga o‘z savollari bilan murojaat etishadi, o‘z fikrlarini bildirishadi. Ilmiy-ommabop ma’ruzalarning ilmiy bilim shakli sifatidagi eng asosiy maqsadi mavjud ma’naviy-ma’rifiy, ijtimoiy muammolar mohiyatini ochib berish, ularni hal etish bo‘yicha faoliyatning ehtimoliy usullarini ko‘rsatib berishdan iboratdir. Shu sababli ilmiy-ommabop ma’ruzalar etarlicha tayyorgarlik va bilimga ega auditoriya bo‘lishini nazarda tutadi.

Bo‘lajak pedagog kadrlarni tayyorlashda aynan ma’naviy meros – xalq pedagogikasining ta’lim-tarbiyaga oid asosiy g’oyalari bilan tanishtirish orqali ularda pedagogik faoliyatda samarali foydalanishga zamin tayyorlaydigan bilim, ko‘nikma va malakalarni egallashlariga asosiy e’tiborni qaratish zarurdir.[63]

Ijtimoiy pedagogik amaliyotga tayyorlashda ijtimoiy gumanitar fanlarning ahamiyati katta bo‘lib, bu fanlarni o‘rganish talabalarga fanning mohiyati, adabiyotlardan foydalanish yo‘llarini o‘rgatmasa, bayonni ilmiy, izchil, aniq, tushunarli va ishonarli, nazariya va amaliyot birligiga qurmasa bilim formal o‘rganiladi. O‘quv materialarini tushuntira olmaslik – tushunmaslikka, qo‘llab ko‘rsatmaslik – qo‘llay olmaslikka, qiziqtirmaslik – fanga qiziqishning yo‘qolishiga olib keladi. Ijtimoiy hayotda hamma voqea-hodisalar bir-biriga bog’liqligi kabi ta’limda ham hamma narsa bir-biriga bog’lanishi kerak. Uzviylik va uzluksizlik darsning tuzilishida ham namoyon bo‘lishi kerak. Ya’ni mavzuni tushuntirish,

[61] Bag'rikenglik tamoyillari Deklaratsiyasi. Betti Readon. Bag'rikenglik: tinchlik sari olg'a qadam. YuNESKO, 2005.
[62] Diniy bag’rikenglik va mutaassiblik: (yuz savolga – yuz javob) / Mas’ul muharrir O.Yusupov. –T.: Toshkent Islom universiteti nashriyot-matbaa birlashmasi, 2013.
[63] Mutalipova M.J. Xalq pedagogikasi. – T.: Fan va texnologiya, 2015. – 5-6 b. – B. 160.

takrorlash, mustahkamlash, o‘rganilgan materiallarni tekshirib borish talab qilinadi. Bu orqali talabalar mustaqil, tizimli ishlash malakalariga ega bo‘ladilar.

Ijtimoiy pedagogik amaliyot sotsiologiyadagi avlodlar almashinuvi nazariyasi bilan uzviylikda amalga oshiriladi. Avlodlar almashinuvi nazariyasi hozirgi avlodlar xulqi, faoliyati maqsadlarini belgilashni, hayotiy ustuvorliklarini belgilash kabilarni o‘zida ifoda etadi.[64] Hozirgi kunda o‘quvchi-yoshlarning ijtimoiylashuvi jarayoni murakkablashdi va ularning ijtimoiy balog’atga etish omillari o‘zgargan.

Talabalarning ijtimoiy etuklikka erishuvi bir qator mustaqil omillar (oila, maktab, jamoa, ommaviy axborot vositalari, yoshlar tashkilotlari va boshqa guruhlar) ta’siri ostida amalga oshadi. Mazkur ijtimoiy mexanizmlarning har biri yoshlar tarbiyasida turli xil vazifalarni bajaradi va o‘zgacha ta’sir etadi. Ijtimoiy etuklik ob’ektiv reallikni anglash, o‘zining asosiy ijtimoiy va psixologik xususiyatlarini ifoda etish hamda amaliyotda tatbiq etishning umumiyligini bildiradi.

Oliy ta’lim muassasalari talabalarini ijtimoiy pedagogik amaliyotga tayyorlashda biografik ta’limni joriy etish uchun bakalavr bosqichi talabalari 4 yil davomida o‘zlashtirishi lozim bo‘lgan faoliyatga doir barcha bilim, ko‘nikma, malaka va kompetentsiyalar, faoliyatga doir barcha mavzular, faoliyatning ijtimoiy-huquqiy jihatlari, faoliyat uchun zaruriy shaxsiy xususiyatlar batafsil bayon etiladi va talabalar uchun uslubiy qo‘llanma sifatida foydalanish uchun taqdim etiladi. Talabalar muntazam ravishda o‘zlarining individual o‘zlashtirish traektoriyasini belgilab boradi. O‘quv yilining yakunida mas’ul oliy ta’lim muassasasi o‘qituvchisi tomonidan refleksiv suhbat tashkil etiladi. Suhbatda ijtimoiy pedagogik amaliyot asosidagi biografik ta’limning samaradorligi baholanadi va yuqori samaradorlikka erishish imkoniyatlari muhokama qilinadi. Shu asosda talabalar mustaqil ravishda bo‘lajak faoliyatga tayyorgarlik ko‘rib boradi. Mustaqil ravishda maqsadli o‘qish, o‘zini rivojlantirish uchun shaxsiy rejalar tuzishda ham biografik ta’lim samarali hisoblanadi. Biografik ta’lim talabalarga metodik jihatdan ham samarali bo‘lib, bu orqali ular kasbiy faoliyatga, ma’lum lavozimlarga tayyorlanish bosqichlarida ham keng qo‘llashi mumkin bo‘ladi.

Oliy ta’lim muassasasi talabalarini ijtimoiy pedagogik amaliyotga tayyorlash, ularda komil shaxs va mutaxassis xususiyatlarini shakllantirish hamda mazkur faoliyatga aksiologik munosabatni rivojlantirishda quyidagi shart-sharoitlar zarur hisoblanadi:

1. Ta’lim-tarbiya jarayonining talabalarga yo‘naltirilganligi sifatida yangicha qarash. Bu quyidagilarni bildiradi: talaba pedagogik jarayonning ob’ekti emas, sub’ekti sifatida aks etadi, ular maqsadlarga erishish vositasi emas, ta’lim tizimining maqsadi – barcha talaba qobiliyatli, iqtidorli deb qarash, ularning muhim sifatlari sifatida yuksak axloqiy qadriyatlar aks etadi.

2. Ta’lim-tarbiya jarayonini insonrarvarlashtirish, talabalar ishtiroki va

[64] Christian E.W. Kremser. The Misery of Historicism Today: The Generational Theory of William Strauss and Neil Howe. Brill publishing house, 2019. – 179-205 p.

faolligini qo‘llab-quvvatlash. Talabalarda pedagogik, ijtimoiy pedagogik amaliyotga xohish, mustahkam istak, mas’uliyat, kasbiy burch va axloq me’yorlarini singdirish. Talabalarga yuksak ishonch, hamkorlik va muloqot mahorati bilan yondashish muhim bo‘lib, ularni to‘g’ridan to‘g’ri majburlash, qo‘rqitish va tinimsiz salbiy oqibatlarni eslatish orqali o‘qish-o‘rganish, ma’naviy-ma’rifiy, jamoatchilik tadbirlarida ishtirokini ta’minlashdan voz kechish zarur. Shuningdek, talabalarni ijobiy rag’batlantirish, pedagog sifatida shakllanayotgan kasbiy mahorati oraliq natijalarini e’tirof etish muhim hisoblanadi.

Oliy ta’lim muassasalarida mustaqil fikr yurita oladigan, jamiyat va shaxs manfaatlari uchun zarur bo‘ladigan rivojlanish istiqbollarini aniq belgilaydigan mutaxassislar tayyorlash masalasi strategik vazifalarning asosiy yo‘nalishi sifatida tavsiflanadi. Bu o‘z navbatida bo‘lajak o‘qituvshilarni tayyorlashni modernizatsiyalash va uning innovatsion pedagogik asoslarini ishlab chiqish zaruratini yuzaga keltiradi. Bo‘lajak mutaxassislarning kasbiy tayyorgarligini shakllantirish, kasbiy faoliyat uchun zarur bo‘lgan kompetentsiyalar, shaxsiy xususiyatlarni rivojlantirish va shu orqali mehnat bozorida raqobatbardosh mutaxassislarni tayyorlash strategik vazifalar mazmunini belgilab beradi.

FOYDALANILGAN ADABIYOTLAR :

1 Bag'rikenglik tamoyillari Deklaratsiyasi. Betti Readon. Bag'rikenglik: tinchlik sari olg'a qadam. YuNESKO, 2005

2. Diniy bag’rikenglik va mutaassiblik: (yuz savolga – yuz javob) / Mas’ul muharrir O.Yusupov. –T.: Toshkent Islom universiteti nashriyot-matbaa birlashmasi, 2013.

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THE HISTORY OF LAND AND WATER RELATIONS IN THE KALOBOD DISTRICT OF BUKHARA AT THE END OF THE 19TH AND BEGINNING OF THE 20TH CENTURY

Annotation: *This article provides a detailed analysis of the water structures, water supply system, forms of land ownership, and issues related to waqf properties in the Kalobod district, which took shape at the end of the 19th and the beginning of the 20th century and has been preserved to this day. It also highlights the types and amounts of taxes during this period, as well as the distinctive architectural and social characteristics of the neighborhoods and the unique features of the local environment they created.*

Keywords: *Kalobod, jarib, guzar, garden, cultivated fields, peasants, cemetery, graveyard, pilgrimage site, waqf, Shohrud, mirab, rais, tazar, pond, canal, irrigation ditch.*

Introduction. The history of land and water relations in the city of Bukhara is a broad and complex subject of research. Although many studies have been conducted on this topic, it still remains only partially explored. Each part of the ancient city had its own unique system of land ownership, taxation, and water supply. For example, different neighborhoods and areas of the Old City had distinct characteristics: the southern parts were mainly specialized in crafts (the old rabot), the western areas featured groves and cemeteries, while the central shahristan zones experienced water shortages (with the only source being the Havzi Qozi Kalon pond). The eastern section, which we will focus on, consisted of the Kalobod jarib (the term jarib comes from Arabic and is a land measurement equal to one tanob **[1.** ***210*****]**). The urban quarters, or dahas, of Bukhara were organized under this name.

Main Body. A distinctive feature of land and water relations in the Kalobod jarib was that the neighborhoods (guzars) located there had more picturesque gardens and orchards, flower beds, cultivated lands, a favorable climate, and better water supply compared to other parts of the city **[5.** ***245*****]**. As an example, it is worth mentioning some guzars that earned their names based on their natural climate and conditions, such as Ko‘cha bog‘ (“Street Garden” or “Garden Street”) and Dilkusho.

Most of the guzars in the Kalobod area had a semi-rural appearance **[5. *245*]**. This was due to the reconstruction of the city fortress walls in the 16th century. As a result, this area, which had once been located within the city, was left outside the walls but later became an internal part of the city structure again **[3. *119*]**. This transformation contributed to the streets and neighborhoods taking on a more rural character.

Taking into account the favorable living conditions in the jarib, it naturally attracted wealthy nobles as well as migrant populations who were not originally adapted to the environment of Bukhara. For example, in several guzars of this area—particularly in Zomucha, Oybinoq, Dilkushoyi Darun, Qaro Kamol, Fathullo Khoshbegi, and others—these groups made up the majority of the population. As evidence of this, one can mention the Mullo Sulton madrasa. This structure, extremely small in size with only two cells, was built about ten years before the revolution by Mullo Sulton, a native of Tashkent **[5. *249*]**. Additionally, the Muhammad Nabi madrasa, built by a resident of this guzar who was originally a peasant from Denau and engaged in bringing and selling palos (a type of silk fabric) from the city of Karshi, was also active **[5. *250*]**. Furthermore, in the Qaro Kamol guzar, various representatives of Uzbek tribes resided, and in the Dilkushoyi Darun guzar, Persian-speaking peoples lived. In the latter guzar, there were also people from Kholab who, for various reasons including seeking employment, earning a living, and pursuing education, visited the area. However, after not adapting to the conditions of Bukhara, they were forced to seek shelter in this region **[5. *245*]**.

If we examine the history of the jarib in terms of its land and water relations, it can be classified into three main groups:

1. The land located within the jarib, its types, and issues related to their use.
2. The water structures and water supply issues of the jarib.
3. The unique taxation system of the jarib.

First, when discussing the lands in the guzar and their types, they can be further divided into several groups (as classified by the author):

1. Lands under the control of the Amir.
2. Private lands owned by the local population.
3. Lands specifically allocated for public use.
4. Protected and abandoned lands.
5. Gardens, fields, and orchards.
6. Waqf lands.
7. Lands where cemeteries, shrines, and pilgrimage sites are located.

First, when discussing the lands belonging to the Amir, their number was relatively small, with only one of them located in one of the guzars of this jarib. This land was a large house (courtyard) belonging to the Amir, located in the Fathullo Khoshbegi guzar (the courtyard of the house was called havliyi poshogi). No one resided there; the house was well-maintained and kept in a clean, tidy condition, and it was overseen by specially appointed individuals, though there were

no guards present. Typically, this house was used to accommodate special guests who wished to visit the Amir **[5. *252*]**.

The second group of lands, that is, the private property belonging to the local population, was the most common type of land. These lands included residential houses where the population resided, as well as buildings for businesses. The lands in the third group mainly consisted of markets, such as Bozori Xoja located in the Fathullo Khoshbegi guzar, and the covered market (sobot) in the Mehtar Anbar guzar. Among public buildings, there was also a shelter for the poor, known as gadoyxona, located in the Fathullo Khoshbegi guzar. This building was large and resembled a house. Homeless, poor people lived there, receiving food and provisions, likely funded by the "state treasury" (possibly derived from waqf income) **[5. *253*]**. Such structures, as they did not directly fall under waqf property, have been classified as a separate group.

The distinctive feature of unused and abandoned lands is that settlements that arose due to natural conditions were included in this category. For example, in place of the Qaro Kamol guzar, there had previously been a swampy lake. About a hundred years ago (referring to the 18th century), the city territory expanded, and measures were taken to artificially drain the swamp area **[5. *261*]**.

In the next group, when we include gardens, fields, and orchards, such places are among the most common forms in the jarib area. Among them, although not suited to the city environment, extensive use of agricultural lands was made. One of the guzars of the jarib, in the Fathullo Khoshbegi guzar, was inhabited by small shopkeepers who profited from their lands. They hired seasonal laborers, known as chorikorlar (farm workers), to work on their land. Some farmers, during the summer, would go to their lands with their families, doing this only to check on the crops and harvest **[5. *251*]**.

The Peskhona neighborhood, which was discriminated against by the population, was also located in the northeastern corner of the city. It bordered gardens and orchards to the north and east, and was considered to be one of the most picturesque and pleasant places **[5. *254*]**. The Dilkushoyi Darun guzar was considered the most beautiful and prestigious among them. The name of the guzar is related to its favorable and pleasant climate ("Dilkusho" – delightful, captivating for hearts), which refers to the availability of water, the location of gardens and orchards, and fertile lands for farming, making the area quite cool and less dusty. In this place, primarily, members of noble families had their homes and would come here to relax during the summer. This area was mainly inhabited by people who were not accustomed to the conditions of Bukhara, including officials from the mountainous regions of present-day Tajikistan ("from the az Khulob area") **[5. *254*]**. Since the area functioned as a resting resort, the local population also adapted their professions to the favorable environment, and a service oriented towards relaxation developed. Seven families prepared tents (shom'yona, tammuk) for the gardens and orchards. There was a great demand for these, and wealthy individuals would either host guests in their gardens or set up the tents during outings. **[5. *255*]**.

The population of Xoja Tabband guzar was mainly engaged in farming. Therefore, part of the population lived off the income from the land and were referred to as "farmers" (dehqonlar) **[3. *122*]**. As mentioned earlier, Qaro Kamol guzar was originally a swamp, but later transformed into a garden, as reported.

Waqf lands also constituted a significant part of the area, and this situation is characteristic not only of the jarib but also of the entire city. As a result of the artificial drainage of the natural lake located in Qaro Kamol guzar, gardens, orchards, and new guzars were formed. Later, Uzbek clans migrated to this guzar and settled there. The area of the guzar included waqf lands, such as the Ja'far Khoja (in A. Jumanazar's research, Ja'far Khoja Naqib) madrasa and mosque in Chorjoy, and the annual taxes paid by the newly arrived population were linked to these lands **[2. *265-266*]**. In the remaining guzars, some of the most famous include the Oybinoq mosque, the madrasa of Isteza, Xoja Tabband mosque, Chor Minor, Fathullo Qo'shbegi xonakoh, Abdullo Qo'chqor mosque, the madrasas of Domullo Hasan and Domullo Sher, as well as many other types of buildings such as mosques, madrasas, xonakohs, pools, ablution rooms, and baths. Another distinctive feature of the Bukhara guzars was that each guzar had at least one or three mosques, madrasas, guzar schools, pools, and its own mazor (shrine).

The distinctive feature of the houses in Qaro Kamol and Mir Taxuri Devona guzars, mentioned in several sentences, is that they were located on waqf land and collected taxes for the benefit of the waqf property each year. For example, the annual tax amount for the inhabitants of Qaro Kamol guzar was initially 5 tiyin (kopeyka – according to the USSR standard) – 1 miriy (one miriy) in Bukhara currency, and during the last years of the reign of the amirs, it increased to 15 tiyin – 1 tanga (one tanga) **[5. *262*]**. Mir Taxuri Devona guzar is also among them, but the amount of taxes collected from it has not been determined. All of this money was spent for the benefit of the mosque and madrasas located in the guzar – mainly for lighting lamps and candles.

In terms of mausoleums, Kalobod is considered one of the largest pilgrimage complexes. Cemeteries, tombs, and shrines, like the buildings of waqf property, are located in each guzar and have remained an inseparable, symbolic part of them. Among the most famous of them are Khodja Zomucha, Khalifa Niyozqul, Kalobodiylar Marqadi, Du Dodaron, Eshoni Ustod, Khodja Tabband, Imam Qozikhon, Avliyo Namadposh, Haji Piyoda, Khodja Hofizi Turob, and other shrines, which are considered the most visited places of pilgrimage. Among them, Ahli Namadposh, Imam Qozikhon, and Shaykh Ali Haji Piyoda shrines stand out particularly **[8., 9]**. A part of the Khodja Nurobod cemetery extends into this guzar area **[3. *124*]**, but it is considered part of another jarib (Iskandarxon).

To summarize the information about the land and its types in the Jarib area, it can be stated that the majority of the groups mentioned above existed in this area. As highlighted earlier, the appearance of the Jarib neighborhoods differed significantly from the rest of the city. While the shahriston (city center) was entirely devoid of greenery, the area we examined was relatively rich in gardens and orchards. The neighborhoods in this area also housed the most visited pilgrimage

sites, with numerous graves and shrines. Additionally, in all the neighborhoods, various forms of waqf (endowment) properties were present.

The water supply of the area also stood out compared to the rest of the city. In the neighborhoods, all types of water infrastructure were present, including pools, reservoirs, canals, ditches, wells, and others. This ensured a consistent and efficient water supply, further distinguishing the area from other parts of the city.

Outside the city of Bukhara, the supply of water to the land was overseen by the mirob, while the portion of the water flowing inside the city walls was monitored by the deputy of the rais. His observation point was located near the Mozor (Mozori Sharif) gate. From this point, he would monitor the flow of water into the city, ensuring it reached the pools and gardens within **[4. *144*]**. The canals outside the city merged into the Shohrud (formerly Zarirud) canal, which provided water to the city. The Shohrud canal, in turn, supplied water to various locations along its route, including the Qazi Nuriddin, Attor, Oybiy Inoq, Fathullo Qo'shbegi, Nodir Devonbegi, Gavkushon, Arbob, Jilavxona, Mavlono Assiriy, Muddao, and Takiya pools. All these pools were filled with water through short passages connected to the Shohrud canal **[4. *145*]**. The Shohrud canal, in some places, was open, while in others, it took the form of a tazar, which was an underground channel with a covered top. Despite the Shohrud canal spreading across many parts of the city, we will focus only on the sections relevant to the Kalobod district.

In Bukhara, various legends and myths related to water infrastructure also formed. Among the canals, the "Jo'yi chappa" canal in the Qaro Kamol district became the subject of various local legends. According to O.A. Sukharev's information, the legend tells that the canal was once owned by a donkey who gained a reputation among the locals. During the canal's use, when it was the donkey's turn to be used, it became angry and reportedly shouted "qayt" (meaning "return"), and from that moment on, the canal began to flow in reverse **[3. *124*]**.

The Shohrud canal, as it flowed through the city, split into several branches, with the majority of these branches passing through the region's territory. The first branch flowed through the northeastern parts of the city — Kalobod, Faziaddin Maxsum (a name possibly miswritten due to a mistake in L.I. Rempel's work), Qaro Kamol, Dilkushoi Darun, Pesxona, Olimxo'ja, Ja'far Xoja, and Ko'cha-bog' reservoirs, providing them with a constant water supply. The remaining sections of the canal passed near the shahristan area, eventually entering the tazars **[4. *145*]**.

The second branch of the canal flowed outside the Kalobod Jarib region, to the south, but did not reach the inner parts of the area. However, it did supply water to the Xalifa Husayn and Shayx Rangrez reservoirs, which were located near Kalobod. The third branch continued to provide water to the inner Kalobod neighborhoods, reaching the Xoja Tabband, Kushuki, and Chor Baqqoli reservoirs in the form of a tazar. The fourth branch only supplied water to the Domullo Sher reservoir in this region, while the fifth flow did not enter the area at all and reached the western limits of the Shahriston district, supplying water to the Xoja Zayniddin and Lesak reservoirs **[4. *145-147*]**. The sixth and final branch did not enter the Kalobod area either. In addition to the major reservoirs mentioned above, other

notable ones in this region included the Hauzi Gungak, Sharifboy Bindi, Chor Minor, and others. The Xoja Hasan (Mulloxon) reservoir, which was part of the Fathullo qo'shbegi neighborhood, was among the reservoirs mentioned **[7]** and was originally formed based on the madrasa of the same name **[3. *120*]**. The Kalobod neighborhood's reservoir was also a large one, and nearly all of these large reservoirs were filled in and buried in the 1930s due to the rise of the rishta disease **[6]**.

In **conclusion**, it can be stated that the Kalobod district was one of the best-watered and most well-supplied parts of Bukhara's old city, with an uninterrupted network of canals and many reservoirs. In places far from or sparsely located from water resources, water supply was also ensured by a special group of workers called mashkobs. Especially in the Imom Qozixon neighborhood, mashkobs formed the majority **[3. *122*]**. In these areas, wells were also operational, the majority of which were located near the cemeteries. In short, the Kalobod district is one of the parts of the city that has left an indelible mark on Bukhara's history. Various forms of land-water relations existed in this area, and many of these still maintain their original form to this day. Currently, restoration work is underway on these structures, with efforts to restore their initial conditions. Architectural monuments that were once lost are being reconstructed, and special attention is being given to pilgrimage tourism, which connects the cemeteries and sacred sites.

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THE IMPORTANCE AND ROLE OF E-COMMERCE IN THE DEVELOPMENT OF ENTREPRENEURSHIP

Abstract: *Electronic commerce is the sale of goods (works, services) within the framework of business activities using information systems in accordance with the contract concluded through an electronic trading platform. In order to liberalize the economy and reduce administrative regulation in our country, to increase market mechanisms in the sale of highly liquid and monopolistic products, and to increase the level of transparency in stock exchange trading and to develop a healthy competitive environment, it is necessary to introduce modern information and communication technologies into the stock market. consistent measures are being taken.*

Key words: *E-commerce, Commodity exchange, liquid and monopoly products, agribusiness, Investments and foreign trade.*

Introduction

The organization and transfer of state purchases and corporate purchases within the framework of electronic commerce shall be carried out in accordance with the procedure established by the Cabinet of Ministers of the Republic of Uzbekistan. According to the decision of the President of the Republic of Uzbekistan No. PQ-4484 dated 08.10.2019, regardless of the form of ownership, in order to create equal conditions for the purchase of highly liquid and monopoly products for all economic entities and to activate stock trading in the republic, 2020 From January 1, a number of new procedures have been developed and implemented.

The main goal of our research is to determine ways to develop the infrastructure of today's commodity market of the commodity exchange of agricultural products in our country. Based on this, it is our task to analyze the dynamics of Uzbekistan's Commodity and raw materials exchange trade, the purchase of agricultural material and technical resources through the exchanges, and the indicators of the sale of agricultural products through the exchanges, and to evaluate their stability. we put The article mainly analyzes relative indicators.

Because our purpose of the research was to determine the trends of sustainable development.

Literature analysis and methodology (literature review)

Development of goods production in agriculture determines the objective need to form a market with appropriate categories and regulatory methods. In practice, there are two types of relations between the producer and the consumer. The first is carried out in accordance with the laws of production and circulation of goods using the market as an exchange. The second is the distribution of the produced product based on the requirements of study and accounting balance. [1].

N.O.Yoldoshev and M.P.Yunusov suggest using the following approaches to the concept of the stock market in the analysis of commodity exchange trade [2] Commodity exchanges embody market mechanisms such as competition, demand, supply, price, and price. The exchange is a place where, on the one hand, the seller, who wants to sell goods, and, on the other hand, the buyer, who is trying to satisfy his demand, meet, both of them are independent economic entities. [3,4].

Results and discussion

The goals, tasks and main directions of agricultural development and regulation of the food market in Uzbekistan are defined based on the strategy of agricultural development of the Republic of Uzbekistan for 2020-2030 [5].. Regardless of the form of ownership, in order to create equal conditions for the purchase of highly liquid and monopoly products for all business entities and to activate stock trading in the republic: according to the decision of the President of the Republic of Uzbekistan No. PQ-4484 dated 08.10.2019; [6].

Purchase of material and technical resources through exchanges. "If the stock market does not work effectively, there will be no market relations. Exchange trading forms free competition, opens new markets for entrepreneurs, sharply reduces the "hidden economy" and corruption, says the head of our state. Speech at the meeting on increasing trading at the Commodity Exchange and expanding the participation of local enterprises on May 17, 2022 in the word [7].

As a result of the reforms, we can analyze the following:

In the last three years, the turnover of the stock exchange doubled and reached 90 trillion soums.At the moment, a new system for taking local products to the stock exchange is being developed. This means an additional income of 2 trillion soums for the farmers. In particular: - from July 1, a separate prospective goods section was established at the stock exchange, and the products produced by local entrepreneurs were sold without additional documents[8].

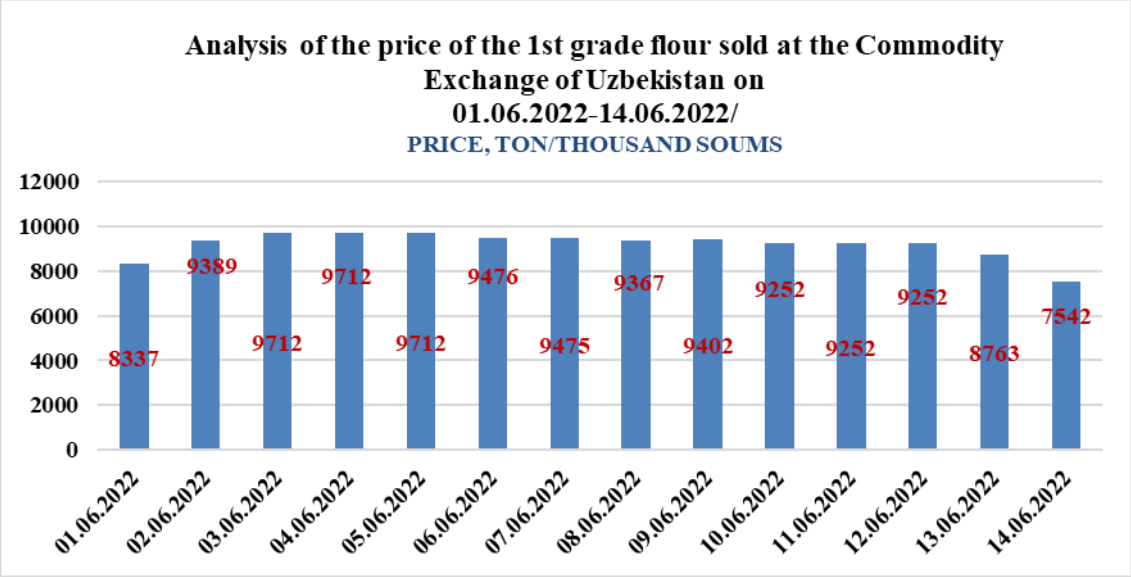

Fig. 1) From July 1, 2022, the Ministry of Agriculture of the Republic of Uzbekistan announced the expected minimum price of grain for the 2022 grain harvest based on the analysis of world prices.

Therefore, from July 1, farmers and clusters put wheat on sale at market prices, which is why the Ministry of Agriculture of the Republic of Uzbekistan announced the expected minimum price of grain based on the analysis of world prices: 3 million/1 ton. If we look at the analysis of the sale of grade 1 flour at the Uzbekistan Commodity Exchange in 2022, we can see the relative amount of the dynamics of the displays on June 01-14. (Fig. 2)

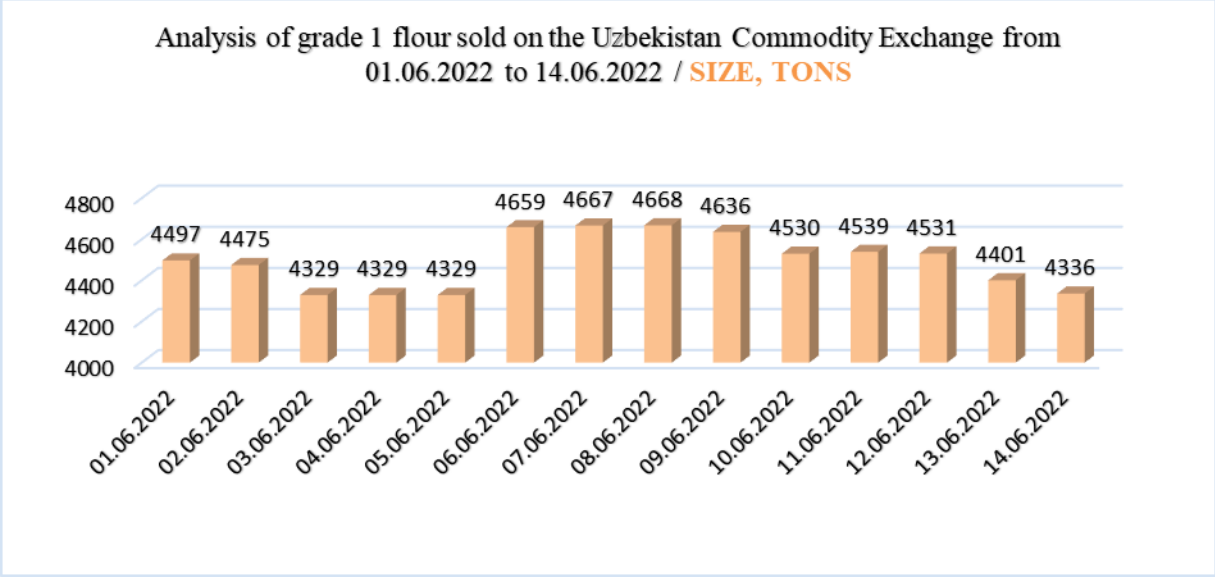

Fig. 2) Analysis of the price of the 1st grade flour sold at the Commodity Exchange of Uzbekistan on 01.06.2022-14.06.2022.

In our opinion, the commodity exchange is in agriculture

It is necessary to implement the following institutional measures to increase the stability of grain products trade:

- a broad and understandable review of proposals for the sale of grain products to potential buyers (daily stock exchange bulletin);

- formation of prices of cereal products at the market price based on supply and demand;

Conclusion

In conclusion, it can be said that the development of commodity production in agriculture determines the objective need to form a market with appropriate categories and regulatory methods. At the same time, it is necessary to create market mechanisms for price formation of highly liquid and monopolistic products and to further develop the activity of the stock exchange only through stock trading.

What should be done for this?

- expanding the list of goods for sale,

- it is necessary to introduce new trading tools that ensure the dynamics of stock trading.

Of course, there should also be adequate supply for this purpose:

I can make the following additional suggestions to ensure the sustainability of grain production.

- increasing the number of mills,

-expanding the area of grain cultivation and increasing its productivity,

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THE IMPACT OF PHYSICAL EDUCATION TRAINING ON THE PHYSICAL CONDITION OF PEOPLE OF DIFFERENT AGE GROUPS

Annotation: *This article examines the topic of methods of teaching students the module "Health-improving physical exercises for children of different ages" in a broad theoretical context and based on advanced foreign experience. "Creation of advanced pedagogical teaching technologies, modern educational and methodological complexes and didactic support of the educational process" is defined as one of the main tasks of general secondary education. Indeed, advanced pedagogical technologies increase the productivity of the educational process, form students' independence of thought processes, increase their enthusiasm and interest in knowledge, form skills and competencies to firmly possess knowledge and freely use it in practice.*

Keywords*: physical training, health physical exercises, cases, balance, coordination, endurance, mental attack, debate, insert.*

Through the improvement of the educational system, great attention is paid to the training of mature, competent, capable of independent thinking, strong-willed, selfless and enterprising personnel in all respects. In this regard, completely new rules on the types of education were introduced into life. The legal and normative basis for the reform of Personnel Training and the system of continuing education was created.Taking into account the role of physical education and sports in healthy education of the future generation of our state, further improvement of sports work, creation of an educational and material and technical base at the level of its modern requirements, targeted state-wide activities are being developed and implemented in order to increase the interest of the population in sports.In a report of the president of the Republic of Uzbekistan Shavkat Mirziyoyev at the expanded meeting of the Cabinet of Ministers, “in the past five years, 1 trillion 230 billion soums have been allocated from the budget for the development of physical education and sports, as well as strengthening its material and technical base. This is in addition to the funds of the National Olympic Committee. We have created a powerful base for the development of children's Sports, High sports skills and Olympic reserves. What other base, additional conditions and tools are needed?”.

Physical education and sports, like all spheres, are formed in a completely new direction of status and write wings towards the high peak. In fact, under the initiative and direct leadership of our country, physical education and sports took place within the framework of the priorities of state policy as a means of forming the gene pool of the nation and educating a harmonious generation.Today, great attention is paid to the training of mature, qualified specialists in society at a time

when our country is experiencing an economic, financial crisis. In the Republic of Uzbekistan, "National Training Program" (1997), "healthy generation State program" (1999), "state educational standards" (1999), "Alpomish" and "Barchinoy" special tests (2000), analysis of the implementation of the tasks set by the president of the Republic of Uzbekistan in PQ-201 of April 11, 2022, "on measures to bring youth to a new level presidential resolution GI (PQ-443, 18.12.2024-y.) was adopted and the adoption of a number of decisions of the Cabinet of Ministers of the Republic of Uzbekistan is an important m directly related to improving the health of the population, the education of the physical perfection of students and young people.

In our republic, the process of updating and developing all areas of research is carried out with activity, along the way, great importance is attached to the science of physical education and sports. It is not for nothing that in the decisions of our government it is argued that it is the duty of higher educational institutions and labor teams to spread physical education and sports more widely among the broad segments of the population, preschool vocational and academic Lyceum in all places.In the system of physical education of the Republic of Uzbekistan, the use of advanced innovative technologies in teaching the lesson of physical education is envisaged to increasingly improve the system of search and training of talented sports youth, which in the future will allow them to train highly qualified sports coaches. ” Didactic provision of advanced pedagogical technologies of education, the creation of modern educational and methodological complexes and the educational process " is defined as one of the main tasks of general secondary education. In fact, advanced pedagogical technologies increase the productivity of the educational process, form the process of independent thinking of students, increase the enthusiasm and interest in knowledge in students, solid assimilation of knowledge, free use of them in practice, form skills and qualifications.

In the educational process based on pedagogical technology, the scope of the activities of the teacher and the student is clearly determined, the exact technology of the organization of education is indicated. “Today, our work on the further development of physical education and sports, especially children's sports, the construction of sports fields, structures and complexes with the necessary equipment, which meet modern requirements in each city and village, pays off positively.”In this sense, the practical introduction of advanced pedagogical Technologies is also important. The technological approach in education is one of the factors that actively influence the pedagogical process and determine its effectiveness, integrity and success.The humanization, democratization of the Uzbek educational system and the introduction of new technologies set the pedagogical science complex tasks of determining the content, structure, level of development, capabilities and technology of Education. Solving these tasks caused a number of problems.At present, various opinions are expressed in the press about teaching on the basis of new pedagogical technology. Thinking about a new, technological approach to education is not accidental.Establishing teaching on the basis of new pedagogical technology, relentless search for the educational process

to create understandable and interesting areas for students, remains an important task of the teacher. It should be done so that students become active subjects of the pedagogical process.

As with all types of education, the use of pedagogical Technologies is important in physical education classes. Because physical education classes ensure the development of students not only physically, but also mentally, they are important in activating students, teaching them to work independently, becoming active subjects of the educational process of students in the later stages of Education. But, in the pedagogical literature, physical education classes pay little attention to the issues of educational technology. When applying pedagogical technologies, it is important to take into account the peculiarities of physical education itself. Nowadays, interest in applying innovative technologies and interactive methods to the educational process is becoming more and more widespread. The use of such methods increases the effectiveness and effectiveness of education, forms in students the skill of thoughtful understanding of the content of the lesson.Innovation is borrowed from the English language, which means" creating a novelty"," innovation". Hence, using a form of work aimed at increasing the effectiveness of the educational process on the basis of innovations, and not on the basis of the same rules as in traditional education, means innovation. Building on pedagogical technologies in education and striving for innovation, the use of various interactive techniques aimed at activating students will help to effectively implement the educational goal.

The idea of technologizing education is not new. 400 years ago, the Czech pedagogue Yan Amos Komensky put forward the idea of technologizing education. He encouraged education to be "technical", that is, everything, whatever is taught, be successful. The result is the educational process, which he called a" didactic machine". For such a didactic machine: clearly set goals; for the achievement of these goals, precisely adapted means; for how to use with these tools, he wrote that it is important to find clear rules.In the theory and practice of education, the first attempts were made in the 50s to give the educational process a technological feature. They found their expression in the creation of complex technical means for traditional teaching.Currently, pedagogical technology is not"considered as technical means of teaching or research in the field of computer use, but it is a study aimed at determining the basics of the educational process and the development of ways to improve educational efficiency by analyzing, developing factors and applying methods and materials, as well as evaluating the methods used."

First group educational methods - (Group I)

The first group of educational methods: ready - made mastering educational activities and methods that provide learners with mastery of knowledge at Level 1.

Lecture-a monological statement of a large volume of educational material by a teacher in continuous time.

The main task of the method is to teach. Signs: strict structure, verbal-logical statement, abundance of information given.

Lectures allow you to highlight important moments.

The conditions for the effectiveness of the method of organizing joint activities with educators include:

- ✓ drawing up a detailed plan of the lecture;
- ✓ the purpose of the lecture topic, tasks and the broadcast of the plan to educators;
- ✓ form short generalizing conclusions after highlighting each plan;
- ✓ to provide a logical connection when a given is passed from one part of a lecture to another;
- ✓ highlight the necessary places for recording (to tell);
- ✓ the correspondence of the lecture with a workshop, practical classes, in which its individual cases are considered in detail.

Technological and instructional–technological maps are used when performing educational–productive work. In addition to technological consistency, they will consist of a guided statement of technological demand, order, means of carrying out general work, the rule of doing things. The map of actions and the order of affairs are used to provide a written instruction: to teach service, diagnosis of malfunctions, adjustment of complex equipment. They contain various production instructions and rules that are performed in production activities. In the place of work, it is most effective for each student to use a written instruction.

Second group educational methods (Group II)

The second group of practical educational methods: educational activities depicting the remembered and those that provide the learners with the mastery of knowledge and skills at Level 2, methods

WORK WITH A BOOK

The method of working with the book: performs the tasks of teaching, upbringing, development and interest.

- ➢ Learners can work with a book:
- ➢ under your leadership in the training session;
- ➢ Make sure they have ways to work with the book independently before putting the task of working with the book in front of the readers at home:uning tuzilishi bilan tanishish;
- ➢ peeping out;
- ➢ reading individual chapters;
- ➢ search for answers to questions;
- ➢ write a Abstract;
- ➢ composing base synopsis;
- ➢ drawing up logical structural drawings ;
- ➢ solving examples and tasks, doing exercises;
- ➢ execution of control tests;

If the work is carried out in a training session, then we divide the material we study by the book into individual parts and control them.

Third group educational methods - (Group III)

The third group of educational methods: discussing, partial-exploratory educational activities and methods that provide learners with the mastery of knowledge and skills at Level 3.

The leading task of the method is to interest: with the help of goal - oriented and skillfully posed questions, learners are tried to remember and state their knowledge of the given topic, discussed with other learners under the guidance of a teacher. Learners, along with the teacher, realize and master new knowledge through step-by-step independent thinking, completion, inference, and generalization.

The advantage of conversation is again that it activates the thinking of the educated and promotes the development of cognitive power.

- Conversations are divided according to their task into:
- introductory or organizing (didactic task: to prepare learners for work in training);
- conveying new knowledge (didactic task: to introduce learners with new material);

synthesizer or reinforcer (didactic function: systematizing, “strengthening”, remembering and thinking of the knowledge of the learners).

The conversations are divided into training and “round table " by organizational form.The” round table " differs from the educational conversation in that in a Free State, the participants are in the order of their location and the main thing is that they take turns expressing their opinion.

The most important thing is to correctly formulate and ask questions. They must have a logical connection between themselves, reveal the essence of the question under study, help to assimilate knowledge in the system. Questions should correspond to the level of development of learners according to their content and form.

Controversy (debate)

Debate (debate) is an active method of exchange of views on a specific problem, teaching in the form of discussion. The method of discussion performs all tasks.

- ✓ This method is used for the following purposes:yangi bilimlarni shakllantirishda;
- ✓ those who receive education will be able to think deeply about one or another question, in ensuring access to their essence;
- ✓ space in the formation of mutual thought exchange skills;

to help educators stand firm in their personal opinion and protect it.

The debate is free, when it develops freely, it can be manageable. It should apply only to topics and questions that need to be mastered.

MENTAL ATTACK METHOD

Mental attack

(breinstroming - dust of minds) - a collective occurrence of the idea of solving practical or scientific problems. Participants try to solve a complex problem at the

time of a mental attack: by not allowing them to criticize, they bring up more personal ideas of solving it, and then distinguish between more rational/effective/acceptable and other ideas, discuss and develop them, assess the possibilities of proving or returning them.This method performs all tasks, but its main task is to activate educational - cognitive activities of those who receive education, interest them in independent understanding and solving the problem, and in them develop a culture of treatment, skills for exchange of ideas, freedom from thinking under external influence, and nurture the overcoming of primary road thoughts in solving a creative task. At the time of solving a task in traditional education, many trainees cannot bother to say their ideas. They are fundamentally afraid of the error of their proposals and the negative attitude of the educator, the destructive criticism and laughter of other participants

INSERT

Insert – application treatment of questions to activate previous knowledge and mark it in the text. After that, the designation of information of each type, which occurs in the text.

Insert - solving the complex tasks of mastering and strengthening the educational material is a teaching method used to develop the educational qualifications of working with a book.

System of marking in the text

(√) - sign confirming what I say I know;

(+) - new information sign;

(–) - to what I know, the sign of conflict;

(?) - it made me think.

PINBORD

Pinbord (from English: pin - fastening, board – writing board) consists of matching discussion methods or training conversation with a practical method.

Educator:

→ Lays out his point of view on the solution of the proposed problem.

→ The mass organizes the right mental attack.

The following ideas are expressed by the learners:

→ They propose, discuss, evaluate the most acceptable (effective and choose other ideas and write them on a sheet of paper in the form of basic words (no more than 2 Words) and attach them to the writing board.

→ Members of the group (2-3 students as designated by the educator climb onto the writing board and in consultation with others:

– let's figure out the disputes;

– the ideas are determined by the symbols by which they can be systematized;

all ideas on these signs are grouped on the writing board (card/ sheets).

Educator:

→ Summarizes and evaluates the results of work.

EDUCATIONAL GAME

Business and role (status)li games are a type of problematic assignment. Only in this case, instead of textual material, staged life situations are used, which are played by educators.

•As a teaching method, it performs the following tasks:

•* educator: formation of universal skills; development of creative abilities, including understanding, formation and analysis of new states;

•* developer: development of logical thinking, speech, ability to learn to environmental conditions;

•* motivational: encourage learners to educational activities, encourage independent inference;

• educator: formation of responsiveness, exchange of ideas.

The implementation of training situations in the form of Game methods and lessons occurs in the following main areas:

•the didactic goal is put before the learners in the form of a task;

•• educational activity is subject to the rules of the game;

• • educational material is used as a tool of the game;

•• training activities include a section of competition that turns the didactic task into a game;

• successful completion of the didactic task will be associated with the results of the game. What is the difference between a business game and a role-playing game?

Business Game participants are offered a plot with a game built in a vital state, in which the participants are approached with a single common goal: to solve the proposed problem.At the same time, each participant must fulfill a separate role goal. Therefore, the development of the solution takes the process to be of an allocative-group Nature: each participant first makes a decision according to his or her task objective, followed by his or her arrival with the group. The fulfillment of a special task goal depends on the results of the decision-making of the entire group. Typically, solving a muaommo in a business game sequel is done in several stages (2 to 10 and one game is more).

Assessment of the movement of participants is carried out according to the final and intermediate results: intermediate assessment allows us to influence the movement of participants during the game in order to increase their awareness in the implementation of the specified goal, when assessing the final result, the organizational activities of the participants and the fulfillment of a role-playing goal by them are taken into account.The role-playing game, shown in such a situation as business, is based on the active joint actions of the participants in solving the problem. Subject participants have one mandatory goal - to solve the problem. But alohidali goals, as in a business game, are not agreed. The goals of each of the participants in the role - playing game are to win, show themselves. Situational play endings are judged not only on the outcome of a common goal, but also on the implementation of each participant's roll goals.

You must be as close as possible to real life in the game developed on your hand, but not be too complicated and difficult for the participants.

METHOD OF SITUATIONS

METHOD OF SITUATIONS– is based on the educator's creation of problem situations and the learners ' active cognitive activities.

It is compiled from the analysis of the specific situation, assessment and subsequent decision-making The leading tasks of the method include:

- Trainer-based on knowledge activation;
- * Formation of developmental – analytical thinking, the fact that the evidence of individual phenomena is able to see legitimacy;

Nurturer-formation of mind-exchange skills. The method of using problematic tasks allows us, connecting theory with practice, which makes the material more relevant for those who receive education. Important signs of a learning problem will include:

the presence of the unknown, finding it leads to the formation of new knowledge;

the fact that there are to some extent sources of knowledge in the educated to carry out the search in the direction of finding the unknown.

The problem consists of 3 components:

• known (from the given task).

• unknown (finding leads to the formation of new knowledge).

• previous knowledge (learners' experience) necessary to carry out the search in the direction of finding the unknown.

Thus, a learning problem can be defined as a task with a result or method of execution that is unknown to learners in advance. However, learners have a preliminary idea of how to achieve or solve this result search. Thus, learning. If learners know the solution, the task will not be a learning problem. On the other hand, if learners do not know the solution to a particular task and do not have the means to search for a solution, then it cannot be a learning problem either.The complexity of the problem task (the situation is a “learning” problem) is determined by a number of factors, including the level of the learners. If the introductory material is too large or complex, they will not be able to absorb all the information, will not be able to find a solution, and will lose any interest in the learning activity.

Developing a problem task requires a lot of work and pedagogical skills. As a rule, after several attempts at the task, the study group is able to create a successful version. Nevertheless, such tasks allow you to connect the theory with a real situation. This allows you to activate the learning process in the minds of students, helps them understand the practical benefits of the material being studied for their future professional activities.

Fourth group of educational methods - (Group IV)

The fourth group of educational methods: independent research activities and methods that ensure the acquisition of knowledge at 4 levels.

PROJECT METHODOLOGY

PROJECT METHODOLOGY It implements a comprehensive teaching method that involves the practical application, analysis, and evaluation of knowledge and skills. Learners are more likely to be able to plan and implement their own learning than those using other teaching methods.

They participate in organizing, controlling, analyzing and evaluating the results of the task. In projects, learning is not only valuable in the results, but also in the process itself. The project can be interdisciplinary, within a discipline, or outside of it.

CASE STUDIES

Case-study teaching situation (case English - set, specific situation, study) - this method is based on the organization of typical situations taken from life or artificially created situations, which create situations that organize typical life and require learners to find a more appropriate solution. A case is a descriptive presentation of specific situations taken from the life of a group of people or individuals, which guides learners to formulate a problem and find a more appropriate solution. (2) additional information, including audio, video and electronic media and teaching and methodological materials.

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TAJRIBADA QUYMICH NERVINING NUQSONLARIDA GOMOTRANSPLANTAT QO'LLANILGANDA REGENERATSIYA XUSUSIYATLARI

Rezyume: *Maqolada sutemizuvchilarda periferik nervning regeneratsiya jarayoni o'rganilgan. Tajribalar 3-5 oylik 20 ta quyon ustida bajarildi. Barcha hayvonlarga o'ng quymich nervining 3-5 sm uzunlikdagi rezeksiyasi o'tkazildi. Gistologik tadqiqot uchun Bilshovskiy-Gross bo'yicha nervlarni impregnatsiya qilish va mushak to'qimasini Van Gizon, Mallory va gematoksilin-eozin bilan bo'yash usullari qo'llanildi. Nervlarga oid gistologik ma'lumotlar shuni ko'rsatadiki, yangi gomotransplantat uzoq vaqt so'rilmaydi va qisman Valler degeneratsiyasiga uchraydi.*

Kalit so'zlar: *quyon, quymich nervi, gomotransplantat, medikamentoz uyqu, regeneratsiya, Bilshovskiy-Gross bo'yicha impregnatsiya, Van Gizon bo'yicha bo'yash.*

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EXPERIMENTAL STUDY OF SCIATIC NERVE REGENERATION USING HOMOTRANSPLANT

Abstract: *The article studies the process of peripheral nerve regeneration in mammals. Experiments were conducted on 20 rabbits aged 3–5 months. All animals underwent resection of the right sciatic nerve 3–5 cm long. For histological examination, the Bielschowsky-Gross nerve impregnation method was used, as well as Van Gieson, Mallory, and hematoxylin and eosin staining of muscle tissue. Histological data on the nerves show that the new homotransplant does not dissolve for a long time and is partially subject to Wallerian degeneration.*

Keywords: *rabbit, sciatic nerve, homotransplant, drug-induced sleep, regeneration, Bielschowsky-Gross impregnation, Van Gieson staining.*

Kirish. Sutemizuvchilarning periferik nervi yaqqol regeneratsion qobiliyatga ega, ammo bu qobiliyat faqat ma'lum sharoitlarda amalga oshiriladi. Periferik nerv poyasi shikastlangandan so'ng markaziy va periferik uchlarini taqqoslash zarur. Agar sezilarli nuqson mavjud bo'lsa, regeneratsiya atipik tarzda sodir bo'ladi: markaziy uchidan o'sib chiqadigan va Shvann hujayralarini uchratmaydigan

aksonlar degeneratsiyaga uchraydi yoki nevroma hosil qiladi. Aksonlar bilan aloqa qilmagan periferik uchidagi Shvann hujayralari ham nobud bo'ladi. Shunga o'xshash sharoitlarda regeneratsiyani rag'batlantirish uchun mushak, qon tomirlari, yangi yoki konservatsiyalangan gomo- va hetero-transplantatlar periferik nerv va miyani ko'chirish kabi turli xil usullar qo'llanilgan, ammo ular qoniqarli natijalarni ta'minlamagan [1,4]. Nervni gomotransplantatsiya qilish muqarrar ravishda recipientning immunitet reaktsiyasini keltirib chiqaradi, bu to'qimalarning mos kelmasligi bilan bog'liq. Recipient organizmida antitanalar hosil bo'ladi va immunokompetent hujayralar faollashadi, bu esa transplantatning rad etilishiga va nobud bo'lishiga olib keladi [2]. Ushbu muammoni hal qilishning istiqbolli yondashuvlaridan biri bu recipientning immunogeneziga ta'sir o'tkazish bo'lib, bu gomotransplantatning saqlanishini ta'minlash imkonini beradi. Bunday sharoitlarda transplantatning Shvann hujayralari aksonlarning regeneratsiyasini va nuqson sohasida nerv to'qimasining shakllanishini ta'minlaydi [3,5]. Bizning avvalgi tadqiqotlarimizda periferik nervlarning shikastlangan nervning periferik uchining rolini bajaradigan yangi gomologik gomotransplantatlardan foydalangan holda deyarli butunlay olib tashlanganidan keyin quyonlarda tiklanish imkoniyati ko'rsatilgan. Gomotransplantatning omon qolishini oshirish uchun biz vaqtincha recipientlarning immunitet tizimini medikamentoz uyqu va gipotermiya induktsiyasi orqali bostirdik**.**

Tadqiqot maqsadi. Tajribada quymich nervining nuqsonlarida gomotransplantat qo'llanilganda regeneratsiya xususiyatlarini o`rganish.

Tadqiqot materiallari va usullari: Tajribalar 3-5 oylik va massasi 1600-1900 g bo'lgan 20 ta quyonda o'tkazildi. Barcha recipientlarda o'ng quymich nervining 3-5 sm uzunlikdagi rezeksiyasi bajarildi. Rezeksiya qilingan nervning distal uchi regeneratsiyani oldini olish uchun bukilgan.Operatsiyadan so'ng barcha quyonlarda operatsiya qilingan oyoqda harakat funktsiyasi va og'riq sezgirligi buzilishi kuzatildi. Oyoqlarda trofik yaralar paydo bo'ldi, ular ba'zi hollarda infektsiyalangan, bu esa 9 ta quyonning erta o'limiga olib keldi. 12 ta quyonda barmoq falangalari rad etildi, 5 ta holda trofik yaralar qarama-qarshi tomonda ham paydo bo'ldi. Jami uchta tajriba seriyasi o'tkazildi:

1. 1-seriya (n=18): Ushbu seriyadagi quyonlar mushaklarning atrofiyasi darajasini o'rganish uchun denervatsiya operatsiyasidan so'ng turli muddatlarda (1, 2, 3, 4, 5, 6 oy) evtanaziyaga uchratildi.

2. 2-seriya (n=12): Sedaliq nervi denervatsiyasidan 6 oy o'tgach, operatsiya qilingan oyoq sedaliq nervi bo'ylab o'tmas yo'l bilan qayta ochildi. Shikastlangan nerv nuqsoniga recipientlarga qaraganda yoshroq bo'lgan quyonlardan olingan ikkita yangi autolog nerv implantatsiya qilindi. Transplantatlarning proksimal uchlari sedaliq nervining markaziy qismi bilan "uchma-uch" taqqoslandi va tikuvlar bilan mahkamlandi.

3. 3-seriya (n=32): Ushbu seriyadagi hayvonlarga ikkinchi seriyadagi kabi operatsiya o'tkazildi. Gomotransplantatlarning rezorbtsiyasini bostirish maqsadida recipientlarga operatsiyadan keyin 2 hafta davomida ter ostiga medinal (0.2 g/kg) va aminazin (0.1 g/kg) yuborildi. Donorlarga ham nervlarni olishdan oldin

medikamentoz sedatsiya o'tkazildi. Operatsiyadan keyingi davrda to'rtta quyon nobud bo'ldi. Tajriba oxirida quyonlarga havo emboliyasi orqali evtanaziya qilindi. Nervlar va mushaklar 12% neytral formalin eritmasida fiksatsiya qilindi. Gistologik tahlil uchun Bilshovskiy-Gross usuli bo'yicha nervlarni impregnatsiya qilish, Van Gizon, Mallory va gematoksilin-eozin bo'yicha mushak to'qimasini bo'yash qo'llanildi.

Tadqiqot natijalari. 1-seriya tajribalarining gistologik ma'lumotlari shuni ko'rsatadiki, denervatsiyadan keyin boldir mushagi asta-sekin atrofiy o'zgarishlarga uchraydi. Ba'zi joylarda mushak tolalari parchalanadi va yog' yoki bo'sh biriktiruvchi to'qima bilan almashtiriladi.

II seriya natijalari shuni ko'rsatadiki, quyonlarda chuqur trofik yaralar saqlanib qoladi. 10 ta quyonda harakat funktsiyasi va sezgirlik tiklanmadi. Faqat 2 ta hayvonda operatsiya qilingan oyoq-qo'lning qisman tiklanishi kuzatildi. Autopsiya shuni ko'rsatdiki, faqat shu quyonlarda transplantatlar saqlanib qolgan; qolgan hayvonlarda ular so'rilib ketgan. III seriya tajribalarida 28 ta quyon uzoq muddatli kuzatuv ostida bo'lgan. Ushbu seriyadagi tajriba hayvonlarini 2 guruhga bo'lish mumkin edi. I guruhning barcha 11 ta quyonida transplantatsiyadan keyin denervatsiya belgilari saqlanib qolgan; 6 ta holatda bo'g'imlarning doimiy fleksion kontrakturalari rivojlangan va bu quyonlar keskin holdan toygan. Oyoq-qo'llarni yorib ko'rishda faqat 3 ta quyonda gomotransplantatlar aniqlangan, ammo ularning barchasida nerv regeneratsiyasi yo'qligi qayd etilgan. Shuning uchun ularda harakat funktsiyasi tiklanmagani tushunarli.

II guruhning 17 ta quyonida nervlar ko'chirilgandan so'ng 10-15 oydan keyin operatsiya qilingan oyoq-qo'lning funktsiyasi tiklandi. Boldir mushaklarini gistologik tekshirishda atrofiyaning barcha hodisalari ko'p hollarda yo'qolganligi ko'rsatildi. Mushak tolalari diametri normaga yaqinlashdi.

Xulosa. Nervlarga oid gistologik ma'lumotlar shuni ko'rsatadiki, yangi gomotransplantat uzoq vaqt so'rilmaydi va qisman Valler degeneratsiyasiga uchraydi. Gomotransplantatning nerv tolalari ba'zi joylarda butunlay so'rilib ketadi. Markaziy segmentdan regeneratsiya qiluvchi aksonlar nafaqat transplantat atrofida, balki uning ichida ham ko'rinadi, ular ko'plab to'plamlar orqali o'sib chiqadi.

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ASTRONOMIYA FANNINI O‘QITISHDA INTEGRATIV MATERIALLARNI TANLASH TAMOYILLARI

Annotatsiya. *Maqolada fizika va astronomiya darslarini tashkil etishda boshqa fanlar bilan aloqadorligi, integratsiya ko‘lami keng qo‘llanilib kelinishi haqida so‘z boradi. O‘quv jarayonini tashkil etishda hamda o‘quv materiallarini bayon etishda integratsiya tamoyillarining keng ko‘lamliligi, o‘quvchilarni integrativ bilim bilan qurollantirilib borilishi asosiy vazifa etib tayinlangan. Integrativ materiallarni axborot resurslari bilan boyitish hamda ularni qo‘llash qoidalarini yaxshi bilishlari zarur.*

Kalit so’zlar: *integrativ ta’lim, integratsiya, axborot resurslar, tabiiy fanlar integratsiyasi, integratsiyalangan darslar.*

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PRINCIPLES OF SELECTING INTEGRATIVE MATERIALS IN TEACHING ASTRONOMY

Annotation. *The article discusses the connection with other subjects, the wide use of the scope of integration in organizing physics and astronomy lessons. The main task is to use the principles of integration in organizing the educational process and presenting educational materials, and to equip students with integrative knowledge. It is necessary to enrich integrative materials with information resources and to know the rules for their use.*

Keywords. *Integrative education, integration, information resources, integration of natural sciences, integrated lessons.*

Kirish. Dunyoda ro‘y berayotgan texnika fan va axborot texnologiyalarning rivoji tufayli, jahonning har turli burchaklarida astronomiya fanini o‘qitishda elektron ta’lim resurslaridan foydalanish amaliyotlari keng tarqalgan. Bu masala yuzasidan turli xil qarorlari o‘z ijrosini topgan. Bularga misol tariqasida quyidagilarni keltirishimiz mumkin. O‘zbekiston Respublikasi Prezidentining 2022-yil 28-yanvardagi PF-60-son “2022-2026-yillarga mo‘ljallangan yangi O‘zbekistonning taraqqiyot strategiyasi to‘g‘risida”, 2019-yil 8-oktyabrdagi PF-5847-son “O‘zbekiston Respublikasi oliy ta‘lim tizimini 2030-yilgacha rivojlantirish konsepsiyasini tasdiqlash to‘g‘risida” Farmonlari, 2017 yil 14 sentabrdagi PQ-3275 “Mirzo Ulug’bek” nomidagi ixtisoslashtirilgan davlat

umumta’lim maktab-internatini va “Astronomiya va aeronavtika” bog’ini tashkil etish to’g’risida”gi qarori, 2018 yil 12 fevraldagi F-5209-son “O’zbekiston respublikasida kosmik tadqiqotlar va texnologiyalarni rivojlantirish chora-tadbirlari to’g’risida”gi farmoyishi, 2022-yil 21-iyundagi PQ-289-son “Pedagogik ta’lim sifatini oshirish va pedagog kadrlar tayyorlaydigan oliy ta’lim muassasalari faoliyatini yanada rivojlantirish chora-tadbirlari to‘g‘risida”, 2022–2026 yillarda xalq ta’limini rivojlantirish bo‘yicha milliy dastur (PF-134-son, 2022-yil 11-may) Dasturda maktab ta’limining sifatini oshirish, pedagog kadrlarni malakasini oshirish, zamonaviy o‘quv metodikalarini joriy etish va axborot-kommunikatsiya texnologiyalarini ta’lim tizimiga integratsiya qilish kabi maqsadlar ko‘zda tutilgan.. [2].

Adabiyotlar sharhi. Hozirgi axborotlashgan turmushning barcha jabhalarida, fizika, astronomiya, kimyo, biologiya va boshqa texnika fanlarining integratsiyasi jarayonlari keng ko‘llamda qo‘llanilib kelinmoqda. Shu bois ham bo‘lajak mutaxassis o‘qituvchilar, ixtisoslashgan hamda o‘rta umum ta’lim maktablarida predmetlar bo‘yicha keng integrativ bilimlar bilan qorollanib kelmoqdalar.

Bunda bo‘lajak pedagog maqsadga qaratilgan, uslubiy hamda ilmiy asoslangan va o‘quv materiallarining axborot resurslari bilan boyitilgan maqsadga muvofiq integrativ materiallarni tanlash hamda ularni qo‘llash qoidalarini yaxshi bilishlari zarur.

O‘qituvchi maktab ko‘lamidagi ma’lumotlarni balki, mavzularga oid integrativ materiallarni yig‘ishi, mashg‘ulotlarda uni qo‘llashi, ular bilan birgalikda axborotlashgan integrativ darslarni hamda darsdan tashqari mashg‘ulotlarda zaruriy metodlarni izlab o‘quvchilarga yetkazishi kerak.

Tabiiy fanlar integratsiyasi g‘oyasi avval ham ilgari surilgan bo‘lib, ular orasida astronomiya fani ham bo‘lib, ular quyidagicha shakllangan.

XVIII-XIX asrlar: fanlar hali to’la ixtisoslashmagan bo‘lib tabiatshunoslik bir butun fan sifatida qaralgan.

XX asr: fanlar chuqurlashuvi, ixtisoslashuvi yanada kuchaydi, natija fanlar turli qismlarga bo‘linib borda boshladi

XXI asr: yana fanlarni integratsiyalash tendensiyasiyasi kuchaydi, chunki murakkab hayotiy muammolarni faqat bir fan doirasida hal qilish qiyin.

Integratsiya, faqat nazariy bilimlarni emas, balki real hayotdagi muammolarni hal qilishni o‘rgatadi. Darslar o‘quvchilarga:

- **Tizimli fikrlashni** o‘rgatadi, ya’ni turli fanlar orqali biror hodisa yoki jarayonni to‘liq va chuqur tahlil qilishni. Yani astronomiya fanida olgan bilimlarini mustahkamlashga yordam beradi
- **Kreativ fikrlashni rivojlantiradi**, ya’ni o‘quvchilar fanlarni qanday kombinatsiya qilishni va yangi yechimlarni qanday topishni o‘rganadilar.

Misol: Ekologik muammolarni hal qilishda biologiya (biologik turlarning o‘zgarishi), geografiya (iqlim va tabiiy resurslar), kimyo (pollutantlar) va matematikani (statistika, modellar) birgalikda o‘rganish kabilardir.

Mazmuni. Integratsiyaning zamonaviy metodlari

1. **Interaktiv o‘qitish**: Bu metodda o‘quvchilar o‘z fikrlarini erkin ifodalab, fanlararo masalalar ustida guruh bo‘lib ishlashadi. Misol uchun, iqlim o‘zgarishi masalasini astronomiya, geografiya, biologiya va kimyo nuqtai nazaridan birgalikda tahlil qilib o‘z fikrlarini yuritibgina qolamy xuloslar ham qilib berishadi.
2. **Gamifikatsiya**: O‘quvchilarga o‘yinlar va interaktiv mashqlar orqali astronomiya fanining qiziqarli va amaliy tomonlarini ko‘rsatishdir. Bu jarayonda o‘qituvchining ijodkorligi muhim rol o‘ynaydi. O‘yinlar va simulyatsiyalar orqali o‘quvchilarga fanlar o‘rtasidagi aloqalarni o‘rganishga yordam beradi.
3. **Fandagi texnologik yondashuvlar**: Virtual laboratoriyalar, simulyatsiyalar va ilmiy tadqiqotlar yordamida o‘quvchilarga real tajribalar o‘tkazish imkoniyatini yaratish. Misol uchun, astronomiya fanidagi laboratoriyalarini simulyatsiya qilish orqali o‘quvchilar natijalarni aniqlashlari mumkin. Bunda o‘quvchilar mustaqil ishlashni o’rganadi.

Astronomiya fanini boshqa fanlar bilan integratsiya qilish o‘quvchilarga bir nechta fanlarning umumiy qonuniyatlarini tushunishga yordam beradi, bu esa nafaqat nazariy bilimlarni, balki amaliy ko‘nikmalarni rivojlantirishga ham yordam beradi. Interdiscipliner ta’limda bir nechta fanlar o‘rtasidagi ko‘prikni qurish, o‘quvchilarda murakkab masalalarni hal qilishda kreativ yondashuvni uyg‘otadi.

Integratsiya qilishdagi ba’zi amaliy qiyinchiliklar

- **O‘qituvchilarning tayyorgarligi**: Astronomiya va tabiiy fanlar bo‘yicha bir nechta fanlarni o‘qitish o‘qituvchilardan yuqori darajada malaka va bilim talab qiladi.
- **O‘quv dasturlari va resurslar**: Integratsiya qilish uchun o‘quv dasturlari va materiallari moslashtirilgan bo‘lishi kerak. Ba’zan, fanlararo yondashuvni qo‘llashda mavjud resurslar yetishmaydi.
- **Sinflararo hamkorlik**: Bir nechta o‘qituvchilarning birgalikda ishlashi va sinflararo integratsiyani ta’minlash ko‘p vaqt va resurslarni talab qiladi.

Astronomiya va tabiiy fanlarni integratsiya qilish — bu o‘quvchilarni global muammolarni hal qilishga tayyorlashda kuchli vosita bo‘lishi mumkin. Bu, o‘quvchilarga faqatgina nazariy bilimlarni o‘rganish bilan cheklanib qolmasdan, balki o‘z bilimlarini real hayotda qo‘llashni o‘rgatadi.

1. Tabiiy fanlarni o‘qitishda tanlangan integrativ materiallar mavzu doirasida bo‘lishi, uni mohiyati va xususiyatlarini aniq va mos holatda ifodalashi kerak.
2. Tanlangan integrativ material axborot resurslari hamda ko‘rgazma vositasi, o‘qituvchi uchun nazariy bilimlarni chuqur o‘zlashtirishda metodik yordam bo‘lishi lozim,

3. Ushbu axborot resurslari yordamida o‘tilgan mavzular o‘quvchilar ongida, o‘quv meteriallarni o‘zlashtirishda imkon beruvchi, shuningdek fan asoslariga qiziqtirishga yordam beradi.

Integrativ o‘qitish jarayonida o‘quvchi yangi bilimlarni o‘zlashtirishi balki, oldingi o‘rganilgan materiallani, boshqa predmetlardan olgan bilimlarini ham mustahkamlashi va amaliyotda qo‘llay bilishini ta’minlaydi.

Integratsiyalangan darslar o‘quvchining ilmiy salohiyatini, dunyoqarashini kengaytiradi va barcha fanlardan olgan bilimlarini mustahkamlashga yordam beradi.

Integrativ materiallar zamonaviy elektron resurslar yordamida boyitilgan bo‘lsa, o‘quvchilarning ularga qiziqishi ortadi. Bu umumiy o‘rta ta’lim maktablarining mazmuniga qo‘yilgan hozirgi davr talablaridan kelib chiqqan eng muhim tanlash mezonlaridan biridir.

Natijalar. Mavzulararo savollar berish: Masalan, fizikadagi tezlik mavzusini astronomiyadagi sayyoralar harakati bilan hamda fizikadagi energiya tushunchasini biologiyadagi hujayra faoliyati bilan bog‘lash.

- **Fanlararo loyiha ishlari**: O‘quvchilar biror mavzu bo‘yicha loyiha tayyorlaydi (masalan, “Quyosh sistemasi va uning tuzulishi”).
- **Integrallashgan darslar**: Ikki yoki undan ortiq fan o‘qituvchilari tomonidan birgalikda o‘tiladigan darslar.
- **Ekskursiyalar va tajribalar**: Real hayotdagi ob’ektlar orqali fanlararo bilimlarni birlashtirish.

Tabiiy fanlar integratsiyasida foydalaniladigan texnologiyalar

- **STEAM yondashuvi** (Science, Technology, Engineering, Arts, Mathematics)
- **CLIL metodikasi** – Til va fan integratsiyasi (ingliz tilida tabiiy fanlarni o‘rganish)
- **Problemali ta’lim** – Fanlararo muammolarni hal qilishga yo‘naltirilgan yondashuv
- **Loyiha asosida o‘qitish** – Real hayotdagi masalalarni yechish orqali o‘rgatish

5. Integratsiyaning samarasi

- Fanning real hayot bilan bog‘liqligi oshadi.
- O‘quvchilarning tahliliy va tanqidiy fikrlashi rivojlanadi.
- Turli fanlar bo‘yicha chuqur bilim shakllanadi.
- Amaliyotga yo‘naltirilgan ta’lim kuchayadi.

Xulosa. Xulosa o’rnida shuni ta’kidlashimiz joizki, astronomiya va tabiiy fanlardagi bilimlarni yaxlit holda o’rganish ilmiy dunyoqarashni yanada shakllantirishga olib keladi. Astronomiya fanlarni yaxlit holda elektron resurslari integratsiyasi bilan boyitib borish barcha tabiiy fanlarni ko’lamini kengaytiribgina qolmay uni amaliyotda qo’llay olishni ham o’rgatadi. Astronomiya, fizika, biologiya, kimyo, geografiya fanlari o’quvchilarga yuqori sinflarda o’qitilish boshlanadi. Ularni barchasini yaxlit holda tabiiy fan deb yuritiladi. Mana shu tabiiy fanlarni o’qitishda elektron ta’limiy resurslarning o’rni yuqori bo’lib bormoqda.

Ayniqsa, yuqori sinfda o‘qitiladigan astronomiya fanini o‘qitishda anashu tabiiy fan bilimlariga tayangan holda o‘qitish maqsadga muvofiq bo‘ladi.

Darslarni tashkillashda albatta axborotlashgan jamiyatning ko‘lami keng, bu esa sifatli ma’lumotlar bilan boyitish hamda axborot resurslari bilan hamohang birga borishni talab qiladi. Bu esa darslar jarayoni keng va tushunarli bo‘lishga, o‘quvchilarni dunyoqarashini yanada boyitishga xizmat qiladi.

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TIBBIYOT OLIYGOHI TALABALARINING KLINIK TAFAKKURINI SHAKLLANISHIDA MUSTAQIL TA`LIMNING ROLI

Annotatsiya. *Ushbu maqolada tibbiyot oliygohi talabalarining mustaqil izlanishlarining ularning klinik tafakkurlarining shakllanib borishi va rivojlanishidagi ahamiyati ko'rsatilgan. Talabalarga mustaqil ishlashlarida asosiy ko'rsatmalar berilgan. Shuningdek tafakkurning rivojlanib borishi bo'lajak shifokorlarning keyingi mustaqil amaliyotlarida zarurligi ko'rsatib o'tilgan.*

Kalit so'zlar.*Mustaqil ta'lim, talaba, innovatsiya, tashxis,sintez, klinik tafakkur, anatomiya, fiziologiya, patologiya, farmakologiya.*

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THE ROLE OF INDEPENDENT LEARNING IN THE FORMATION OF CLINICAL THINKING AMONG MEDICAL STUDENTS

Abstract. *This article demonstrates the importance of independent research by medical students in the formation and development of their clinical thinking. Basic guidelines are given to students in their independent work. The necessity of developing thinking in the future independent practice of future doctors is also emphasized.*

Keywords*. Independent learning, student, innovation, diagnosis, synthesis, clinical thinking, anatomy, physiology, pathology, pharmacology.*

Zamonaviy tibbiyotning shiddat bilan rivojlanishi va kasalliklarning murakkablashuvi sharoitida tibbiyot oliygohlari bitiruvchilaridan nafaqat chuqur nazariy bilimlar, balki klinik tafakkurning yuqori darajasi ham talab etiladi. Klinik tafakkur – bu bemorning holatini baholash, tashxis qo'yish va davolash bo'yicha optimal qarorlar qabul qilish uchun nazariy bilimlarni amaliyotda qo'llash, tahlil qilish, sintezlash va baholash qobiliyatidir. Klinik tafakkurning shakllanishi uzoq va murakkab jarayon bo'lib, u nafaqat o'quv jarayoni, balki talabalarning mustaqil ta'lim faoliyati bilan ham chambarchas bog'liqdir.

Yuqoridagilarni e'tiborga olib, tibbiyot oliygohi talabalarida klinik tafakkurning shakllanishida mustaqil ta'limning rolini nazariy va amaliy jihatlardan keng tarzda yoritishga harakat qilamiz.

Klinik tafakkur – bu tibbiyot xodimlarining bemor haqidagi ma’lumotlarni to’plash, tahlil qilish, baholash va sintezlash, tashxis qo’yish, davolash rejasini ishlab chiqish va uni amalga oshirish jarayonida qo’llaydigan kognitiv jarayondir. Klinik tafakkur quyidagi tarkibiy qismlardan iborat:

1. Bilim: Klinik tafakkur nazariy bilimlarga asoslanadi. Talabalar anatomiya, fiziologiya, patologiya, farmakologiya va boshqa tibbiy fanlar bo’yicha chuqur bilimlarga ega bo’lishlari kerak.

2. Ko’nikmalar: Klinik ko’nikmalarga bemorni ko’rikdan o’tkazish, anamnez yig’ish, laboratoriya va instrumental tekshiruvlar natijalarini tahlil qilish, tashxis qo’yish, davolash rejasini ishlab chiqish va uni amalga oshirish kiradi.

3. Munosabat: Klinik tafakkur talabalardan empatiya, mas’uliyat, tanqidiy fikrlash va qaror qabul qilishda mustaqillikni talab qiladi.

4. Tajriba: Klinik tafakkur amaliyot davomida shakllanadi va rivojlanadi. Talabalar klinik holatlarni kuzatish, muhokama qilish va ularda ishtirok etish orqali tajriba orttiradilar.

Klinik tafakkurning ahamiyati quyidagilarda namoyon bo’ladi:

• To’g’ri tashxis qo’yish: Klinik tafakkur shifokorlarga bemorning holatini to’g’ri baholash va aniq tashxis qo’yish imkonini beradi.

• Optimal davolash rejasini ishlab chiqish: Klinik tafakkur shifokorlarga har bir bemor uchun individual davolash rejasini ishlab chiqish imkonini beradi.

• Davolash samaradorligini oshirish: Klinik tafakkur shifokorlarga davolash jarayonini muntazam ravishda baholash va davolash rejasiga o’zgartirishlar kiritish imkonini beradi.

• Tibbiy xatolarning oldini olish: Klinik tafakkur shifokorlarga tibbiy xatolarning oldini olish va bemorlarning xavfsizligini ta’minlash imkonini beradi.

Mustaqil ta’lim – bu talabalarning o’quv dasturida belgilangan mavzularni o’zlari mustaqil ravishda o’rganish, bilim va ko’nikmalarini shakllantirishga qaratilgan faoliyatidir. Mustaqil ta’lim quyidagi shakllarda amalga oshirilishi mumkin:

1. Adabiyotlar bilan ishlash: Darsliklar, qo’llanmalar, ilmiy maqolalar va boshqa manbalarni o’qish, konspekt qilish va referatlar tayyorlash.

2. Internet resurslaridan foydalanish: Tibbiy saytlar, elektron kutubxonalar va onlayn kurslardan foydalanib, yangi ma’lumotlarni izlash va o’rganish.

3. Klinik holatlarni tahlil qilish: Klinik holatlarni tahlil qilish, tashxis qo’yish va davolash rejasini ishlab chiqish.

4. Ilmiy-tadqiqot faoliyati: Ilmiy konferentsiyalarda qatnashish, ilmiy maqolalar yozish va tadqiqot loyihalarida ishtirok etish.

5. Malaka oshirish kurslarida qatnashish: Tibbiyot sohasidagi yangiliklarni o’rganish va o’z bilimlarini mustahkamlash uchun malaka oshirish kurslarida qatnashish.

Mustaqil ta’limning tibbiyot talabalari uchun ahamiyati quyidagilarda namoyon bo’ladi:

• Bilimlarni mustahkamlash: Mustaqil ta’lim talabalarga darsda olgan bilimlarini mustahkamlash va chuqurlashtirish imkonini beradi.

• Klinik tafakkurni rivojlantirish: Mustaqil ta’lim talabalarga klinik holatlarni tahlil qilish, tashxis qo’yish va davolash rejasini ishlab chiqish orqali klinik tafakkurni rivojlantirish imkonini beradi.

• Mustaqil fikrlashni shakllantirish: Mustaqil ta’l im talabalarga mustaqil fikrlash, qaror qabul qilish va muammolarni hal etish ko’nikmalarini shakllantirish imkonini beradi.

• O’z-o’zini o’qitish ko’nikmalarini rivojlantirish: Mustaqil ta’lim talabalarga o’z-o’zini o’qitish ko’nikmalarini rivojlantirish, yangi ma’lumotlarni izlash va o’rganish, o’z bilimlarini muntazam ravishda yangilab borish imkonini beradi.

• Mas’uliyatni oshirish: Mustaqil ta’lim talabalardan o’z o’qishlariga mas’uliyat bilan yondashishni, vaqtni to’g’ri taqsimlashni va o’z faoliyatlarini rejalashtirishni talab qiladi.

Mustaqil ta’lim tibbiyot talabalarida klinik tafakkurning shakllanishida muhim rol o’ynaydi. Mustaqil ta’lim orqali talabalar nazariy bilimlarini chuqurlashtiradilar, klinik ko’nikmalarini rivojlantiradilar, mustaqil fikrlash va qaror qabul qilish qobiliyatlarini shakllantiradilar.

1. Nazariy bilimlarni mustahkamlash: Mustaqil ta’lim talabalarga darsda olgan nazariy bilimlarini darsliklar, qo’llanmalar va ilmiy maqolalar yordamida mustahkamlash va chuqurlashtirish imkonini beradi. Bu ularga kasalliklarning patogenezini, klinik belgilarini va davolash usullarini yaxshiroq tushunishga yordam beradi.

2. Klinik ko’nikmalarni rivojlantirish: Mustaqil ta’lim talabalarga klinik holatlarni tahlil qilish, tashxis qo’yish va davolash rejasini ishlab chiqish orqali klinik ko’nikmalarini rivojlantirish imkonini beradi. Ular klinik holatlarni muhokama qilish, tibbiy adabiyotlarni o’rganish va onlayn resurslardan foydalanish orqali o’z bilimlarini mustahkamlaydilar.

3. Mustaqil fikrlashni shakllantirish: Mustaqil ta’lim talabalarga klinik holatlarni tahlil qilishda mustaqil fikrlash, ma’lumotlarni baholash va qaror qabul qilish qobiliyatlarini shakllantirish imkonini beradi. Ular turli xil tashxis usullarini ko’rib chiqish, davolashning afzalliklari va kamchiliklarini baholash orqali o’z mustaqil fikrlarini ishlab chiqadilar.

4. Muammolarni hal etish ko’nikmalarini rivojlantirish: Mustaqil ta’lim talabalarga murakkab klinik holatlarni tahlil qilish, muammolarni aniqlash va ularni hal etish uchun yechimlar izlash orqali muammolarni hal etish ko’nikmalarini rivojlantirish imkonini beradi. Ular klinik protokollar, tibbiy adabiyotlar va onlayn resurslardan foydalanib, o’z yechimlarini asoslashga o’rganadilar.

5. O’z-o’zini o’qitish ko’nikmalarini rivojlantirish: Mustaqil ta’lim talabalarga o’z-o’zini o’qitish ko’nikmalarini rivojlantirish, yangi ma’lumotlarni izlash va o’rganish, o’z bilimlarini muntazam ravishda yangilab borish imkonini beradi. Bu ularga tibbiyot sohasidagi o’zgarishlar bilan doimo xabardor bo’lish va kasbiy faoliyatlarida muvaffaqiyatga erishishga yordam beradi.

Tibbiyot oliygohlari talabalarda klinik tafakkurning shakllanishida mustaqil ta’limning rolini hisobga olgan holda, mustaqil ta’limni tashkil etishga alohida

e’tibor qaratishlari kerak. Mustaqil ta’limni tashkil etishda quyidagi vazifalarni amalga oshirish zarur:

• O’quv dasturlarini takomillashtirish: O’quv dasturlari mustaqil ta’lim uchun yetarli vaqt ajratishni ta’minlashi kerak. O’quv dasturlarida mustaqil tahlil qilish uchun klinik holatlar, muammoli savollar va ilmiy-tadqiqot loyihalari kiritilishi kerak.

• O’quv materiallari bilan ta’minlash: Talabalar mustaqil ta’lim uchun zarur bo’lgan darsliklar, qo’llanmalar, ilmiy maqolalar va boshqa o’quv materiallari bilan ta’minlanishlari kerak. Oliygohlar elektron kutubxonalar, onlayn resurslar va tibbiy saytlarga kirish imkoniyatini yaratishlari kerak.

• O’qituvchilarning rolini o’zgartirish: O’qituvchilar talabalarga mustaqil ta’limda yo’nalish berishlari, ularga maslahatlar berishlari va ularning faoliyatini nazorat qilishlari kerak. O’qituvchilar talabalarni tanqidiy fikrlashga, muammolarni hal etishga va qaror qabul qilishga o’rgatishlari kerak.

• Mustaqil ta’limni baholash tizimini yaratish: Mustaqil ta’limning natijalarini baholash uchun testlar, klinik holatlarni tahlil qilish, ilmiy-tadq ilmiy-tadqiqot loyihalari va boshqa usullardan foydalanish mumkin. Baholash talabalarni mustaqil ravishda o’rganishga rag’batlantirishi va ularning bilim darajasin aniq baholashi kerak.

• Mustaqil ta’lim uchun sharoit yaratish: Talabalar mustaqil ta’lim uchun qulay sharoitga ega bo’lishlari kerak. Oliygohlar kutubxonalar, kompьyuter sinflari va boshqa o’quv xonalarini tashkil etishlari kerak.

Xulosa qilib shuni aytish mumkinki,tibbiyot oliygohi talabalarida klinik tafakkurning shakllanishida mustaqil ta’lim muhim rol o’ynaydi. Mustaqil ta’lim talabalarga nazariy bilimlarini mustahkamlash, klinik ko’nikmalarini rivojlantirish, mustaqil fikrlash va qaror qabul qilish qobiliyatlarini shakllantirish imkonini beradi. Tibbiyot oliygohlari mustaqil ta’limni tashkil etishga alohida e’tibor qaratishlari, o’quv dasturlarini takomillashtirishlari, o’quv materiallari bilan ta’minlashlari, o’qituvchilarning rolini o’zgartirishlari, mustaqil ta’limni baholash tizimini yaratishlari va mustaqil ta’lim uchun qulay sharoit yaratishlari kerak. Bu choralar tibbiyot oliygohlari bitiruvchilarining kasbiy kompetentligini oshirishga va ularning sog’liqni saqlash sohasiga qo’shadigan hissasini ko’paytirishga xizmat qiladi.

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A UNIQUE METHOD OF ADHESIVE WIG ATTACHMENT FOR BLYTHE DOLLS USING NATURAL SHEEP HAIR WEFTS

Annotation: *A new method for forming an adhesive base on a silicone wig sleeve is presented, achieving a balance between strength and flexibility. Through careful selection of adhesive components and optimization of application parameters, long-lasting attachment has been ensured even under active use of the doll.*
This article is a continuation of the study exploring the phenomenon of Blythe doll customization, titled "An Innovative Approach to Blythe Doll Customization: An Original Method for Creating Wigs from Natural Sheep Wool" [UDC 5527].
Keywords*: Blythe doll customization; sheep wool wigs; silicone base; adhesive bonding; polymer matrix; elastic glue; decorative applied art; wig durability; hair wefts; handmade.*

Introduction.

Blythe doll customization is a branch of decorative and applied arts that combines elements of sculpture, painting, textile design, and perceptual psychology. Modern Blythe customization techniques require the preservation of the doll's sculpted head shape during repeated hairstyle changes and intensive wig handling [1][2].

Traditional adhesive formulations are either too rigid (causing deformation of the silicone base) or insufficiently strong (resulting in hair wefts falling out during brushing) [3][4].

The aim of this study is to develop a composition and application method for an adhesive base that ensures reliable weft fixation, styling flexibility, and long-term durability under active use of customized Blythe dolls.

Materials and Methods

1. Base Selection

Typically, a silicone wig base is used (thickness 0.5 mm, Shore A 20–30). This is a soft silicone material with a texture similar to rubber or skin. It does not crack when bent, does not slip on the doll's head, and provides a comfortable fit and long-lasting wear. It is ideally suited for securing heavy wefts made from natural wool [5].

Pic.1. Silicone wig base for a Blythe doll

2. Adhesive Composition Development

A own functional adhesive was developed specifically for use under delicate conditions, making it ideal for doll customization. The formulation is based on a polymer matrix using a silicone copolymer combined with an elasticity modifier (a dioxazine plasticizer) and a curing accelerator based on a peroxide catalyst at a concentration of 0.5 wt%.

3. Application Technique

A custom multilayer application technique was employed using a fine roller (0.1–0.2 mm per pass) at a temperature of +25 °C. Each layer was pre-cured in a thermal chamber at 40 °C for 5 minutes.

4. Testing

The adhesive's reliability and the wig's resistance to active use were evaluated. A proprietary method was used, combining mechanical testing (ASTM D412) with a simulation of brushing during actual use.

ASTM D412 — Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension [7]. This method allows for the measurement of tensile strength, elongation at break (%), and modulus of elasticity. It is applied to evaluate the adhesive bond between the weft and the silicone base.

Brushing resistance test (use simulation): a specialized doll brush with metal bristles is used. The wig is fixed in place and subjected to 500 brushing cycles (forward-backward = 1 cycle). The number and weight of shed wefts, the presence of adhesive delamination, and the preservation of the base shape and hairstyle are measured [8].

Pic.2. Doll Elena after the brushing resistance test

Results

Bond Strength: The average weft peel strength was 1.8 N (±0.2 N), which is three times higher than that of a wig made using traditional textile base techniques with PVA-type glue [9].

Elasticity: The base could stretch up to 200% without cracking the adhesive film.

Durability: Less than 5% of the wefts were lost after 500 brushing cycles, compared to 25% loss with conventional adhesives.

Conclusion

Thanks to its polymer matrix, the developed adhesive maintains flexibility even at low temperatures, which is important for storage and transportation [10].

The multilayer application technique prevents the formation of glue “bridges” and promotes even load distribution.

The original adhesive base application method proved highly effective, ensuring reliable weft attachment, flexibility, and natural-looking styling, as well as long-term durability under active use.

Pic.3. Dolls Margarita and Anna after one year of use

Summary

Darya Zhauneryk's unique method of adhesive fixation for Blythe doll wigs made from natural sheep wool wefts is an innovation in the world of doll customization. It expands the expressive and artistic possibilities of the doll as an art object:

a) Enables greater realism and reliability of weft-to-base bonding.

b) Allows for individualized character design.

c) Provides flexibility in creating unconventional hairstyles and textures.

Pic.4. Blythe doll Marina with original hairstyle

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GREEN ECONOMY SUSTAINABILITY AND NATURAL RESOURCE SAVING

Annotation: *This article presents measures and measures, as well as decisions and initiatives, to prevent environmental pollution, abnormal heat and cold, increased greenhouse gas emissions, conservation of natural resources, and similar problems.*

Key words: *abnormal heat and cold, water pollution, atmospheric pollution, green space.*

As a result of the growth of the world's population, people's demand and needs for natural resources, housing and agricultural products are increasing sharply. Year after year, as new buildings are being built, factories and factories are being built, the demand for energy consumption is also increasing. As a result of the development of science, modern cars and spacecraft are also being created and used for people. As a result of the decrease in the use of public transport by the population and the use of private cars, the amount of carbon dioxide gas in the air is increasing. As a result of the launch of spacecraft into the sky, the ozone layer is being destroyed, and anomalous heat and cold are also observed. Along with this, environmental pollution and water shortages are also occurring. Some seas and islands are drying up, harming the environment. As a result of water shortages, a number of drastic changes are also occurring in nature. Forest fires are occurring in some countries, while in others, the climate is rapidly warming, turning the environment into a desert as a result of the drying up of green areas and trees.

Figure 1a. Harmful fumes from cars.

Figure 1b. Harmful fumes from factories.

In our country, some of these problems have been observed for the last 5-10 years, and others for 50-60 years. An example of this is the Aral Sea. The Aral Sea has almost dried up since it began to form in the 20th century. As a result, the population of the Autonomous Republic of Karakalpakstan suffers from this. Also, the climate of Uzbekistan is experiencing anomalous heat and cold, as well as dust. The population of our capital has been suffering from various diseases due to the increase in the amount of dust in the air for the past 3 years. The air pollution of the Tashkent region has not left the top 10 in the world for 3 years. In order to prevent such problems, our government has developed various measures, decisions and projects, and various works are being carried out.

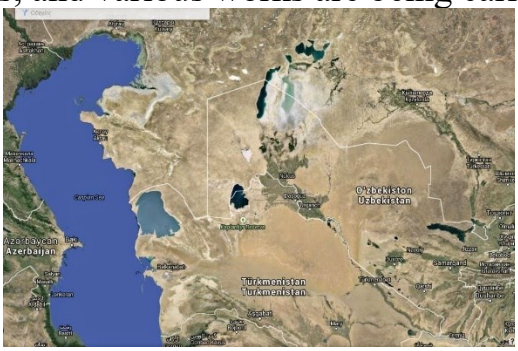

Figure 2a. Aral Sea

Figure 2b. Current state of Tashkent city

In particular, the Resolution of the President of the Republic of Uzbekistan No. PQ-4477 dated 04.10.2019, the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 561 dated 25.10.2023, the Resolutions of the President of the Republic of Uzbekistan No. PQ-133 dated 01.04.2025, and the meeting of the President of the Republic of Uzbekistan on 29.11.2023. These resolutions are about the Strategy of the Republic of Uzbekistan for the transition to a "green" economy for the period 2019-2030, the Taxonomy of the National Economy, Measures to prevent illegal use and waste of fuel and energy resources and increase energy efficiency, as well as measures to rational use of water resources in agriculture and reduce losses.

Figure 3a. Saxaul planting in the Aral Sea

Figure 3. The situation after the planting of saxaul in the Aral Sea

Also, the “Green Space” project has been implemented since March 1, 2022 at the initiative of President Shavkat Mirziyoyev. The goal of the project is to increase green spaces in cities from 8% to 30% by planting more than 200 million tree and shrub seedlings annually. Military personnel are also actively participating in the project, planting millions of ornamental and fruit tree seedlings. Effective parliamentary control over the implementation of the project is being carried out. It is planned to plant 125 million seedlings in the spring of 2025.

In conclusion, we must emphasize that if every Muslim saves the blessings given to him, does not waste them, and follows the path shown by Allah, such global problems will not arise not only in our country but also in the whole world.

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DESIGNING BUILDINGS TAKING INTO ACCOUNT THE RANGE OF NATURAL ENERGY RESOURCES

Annotation: *This article provides information on the sharp increase in natural gas and electricity prices in Uzbekistan, the resulting increase in demand for energy-efficient buildings, and the general legal provisions for energy-efficient building design.*

Key words: *natural gas, electric energy, energy saving, thermal insulation.*

Our country has been developing rapidly since its independence. As the number of citizens of our country increases, more and more civil buildings, industrial buildings and agricultural buildings are being built and used. This leads to an increase in fuel and electricity consumption from year to year. In order to compare ourselves with developed countries and achieve the results they have achieved, many of our standards and regulations are being analyzed, revised and implemented in practice by our government. One of these is natural gas and electricity. The Cabinet of Ministers of the Republic of Uzbekistan has imposed restrictions on the consumption of natural gas and electricity by the population and manufacturing enterprises, that is, set a quantity, starting from January 1, 2024. This quantity is set not for the number of people or families in a household, but for one household. Therefore, a large part of the income of the population is spent on the consumption of natural gas and electricity. Some households are forced to live in cold rooms in winter and hot rooms in summer. This ministry is allegedly going against the President's policy of "We need to please the people." Thus, the Ministry has set the following rates for natural gas and electricity starting from May 1, 2024.

Fixed amount for natural gas

S/n	Consumer name	Unit of measurement	Prices per unit of measurement (including VAT, so‘ms)		
			From May 1, 2024	From 1 June 2024	2025 From April 1
1.5.	For utility and household needs, the population (if gas metering devices are available):	cubic meter			
	a) Based on monthly consumption during the months of November-February:				
	- up to 500 cubic meters per month;		650	650	1000
	- from 501 cubic meters to 2500 cubic meters per month;		1500	1500	1800
	- from 2501 cubic meters to 5000 cubic meters per month;		1 950	1 950	2100
	- from 5001 cubic meters to 1000 cubic meters per month;		2 275	2 275	2500
	- from 10001 cubic meters and above per month	cubic meter	2600	2600	3000
	b) based on monthly consumption during the months of March-October:				
			650	650	1 000
	-up to 500 cubic meters per month;		1 500	1 500	1 800
	- from 501 cubic meters to 2500 cubic meters per month;		1 950	1 950	2 100

	- from 2501 cubic meters to 5000 cubic meters per month;		2 275	2 275	2 500
	- from 5001 cubic meters to 10000 cubic meters per month;		2 600	2 600	3 000

A fixed amount for electricity.

S/n	Consumer name	Unit of measurement	Prices per unit of measurement (including VAT, so‘ms)
1.2.1.	For household consumers living in multi-apartment buildings and dormitories equipped with centralized electric stoves for cooking, based on monthly consumption:	kWh	
	- up to 200 kWh per month;		225
	- from 201 kWh to 1000 kWh per month;		450
	- from 1001 kWh to 5000 kWh per month;		675
	- from 5001 kWh to 10000 kWh per month;		787,5
	- 10000 kWh per month and above.		900
1.2.2.	For other consumers, based on monthly consumption:		
	- up to 200 kWh per month;		450
	- from 201 kWh to 1000 kWh per month;		900
	- from 1001 kWh to 5000 kWh per month;		1 350
	- from 5001 kWh to 10000 kWh per month;		1 575
	- from 10 000 kWh per month and above		1 800

For this reason, the demand for energy-efficient buildings, that is, the demand for increasing the energy efficiency of buildings and their construction, is increasing.

It is natural for people to ask the question "how can I spend less energy on heating a building (creating a moderate room temperature) in the winter and less electricity on cooling a building (creating a moderate room temperature) in the summer?". Let's give some information about this:

The moderation in the room is lost through the external barrier structures of the building. The external barrier structures of the building include: roofs, roofing, walls, foundations, floors, doors and windows.

These are different ways to increase the thermal conductivity resistance, and we will consider each structure individually.

Covering the underside of the roof structure and the top of the roof structure with thermal insulation material,

Increasing the cross-sectional dimensions of the walls, laying bricks with a gap in the brickwork, covering them with thermal insulation materials,

Increasing the cross-sectional dimensions of the floors or covering the underside with thermal insulation material,

Covering the foundations with thermal insulation materials from the outside,

Making doors and windows from PVC material and increasing the number of glazing units. By building such energy-efficient buildings, an energy-efficient house saves up to 50% of natural gas and electricity compared to a regular house.

In conclusion, we can say that the number of people in our country is increasing from year to year. As a result, the demand for natural resources is also increasing. For this reason, saving natural resources, designing and constructing energy-efficient buildings and structures and devices remains one of the important issues.

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ЭЛЕКТРОПРИВОД КРАНОВЫХ МЕХАНИЗМОВ ПО СИСТЕМЕ ТПН-АД

Аннотация: *В статье рассматриваются особенности применения асинхронных двигателей с тиристорными преобразователями напряжения в системах электропривода крановых механизмов. Проведен анализ схем управления, режимов работы и энергетической эффективности. Показано, что использование тиристорных преобразователей позволяет существенно повысить точность регулирования, плавность пуска и торможения, а также снизить пусковые токи. Приведены экспериментальные данные и сравнительный анализ с традиционными системами управления. Доказано, что модернизация электроприводов крановых механизмов на основе тиристорных систем обеспечивает значительное снижение энергопотребления и повышение надежности оборудования.*

Ключевые слова: *крановый механизм, асинхронный двигатель, тиристорный преобразователь, электропривод, управление, энергия, эффективность.*

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ELECTRIC DRIVE OF CRANE MECHANISMS ACCORDING TO THE TPN-AD SYSTEM

Abstract: *This article discusses the features of using asynchronous motors with thyristor voltage converters in crane mechanism drive systems. The analysis of control schemes, operating modes, and energy efficiency is carried out. It is shown that the use of thyristor converters significantly improves regulation accuracy, enables smooth starting and braking, and reduces starting currents. Experimental data and a comparative analysis with traditional control systems are presented. It is proven that the modernization of crane mechanism drives based on thyristor systems ensures significant energy savings and increases equipment reliability.*

Keywords: *crane mechanism, asynchronous motor, thyristor converter, electric drive, control, energy, efficiency.*

Введение: Современные подъемно-транспортные машины, в частности мостовые и башенные краны, требуют высокой точности управления, плавности движения и надежности в работе. Традиционные схемы управления с прямым пуском асинхронных двигателей сопровождаются большими пусковыми токами и механическими перегрузками, что снижает срок службы оборудования и повышает затраты на эксплуатацию.

Одним из перспективных решений является применение тиристорных преобразователей напряжения, позволяющих регулировать параметры питания двигателя и, соответственно, характеристики его работы. Такая система управления электроприводом особенно актуальна для крановых механизмов, где требуется точное и надежное регулирование движения при различных нагрузках.

В настоящее время в нашей стране отсутствует серийный электропривод механизма подъема по системе ТПН-АД. Разработанный ранее электропривод типа РСТ был выполнен на устаревшей элементной базе, имел большие габариты, поэтому распространения он не получил и в настоящее время не выпускается, В связи со сказанным в СКТБ Башенного краностроения совместно с МЭИ и Истринским филиалом ВЭИ был разработан, изготовлен и испытан крановый электропривод механизма подъема по системе ТПН—^АД мощностью 30 квт. Разработанный электропривод имеет следующие отличия от электропривода типа РСТ:

•силовая схема выполнена реверсивной, что повышает быстродействие электропривода и исключает просадку груза при переходе из 3-го в 4-й квадрант;

•поддерживаются примерно постоянные ускорения при разгоне вне зависимости от массы груза, отсутствие отсечки по току;

•осуществляется энергосберегающий режим с фиксированным углом при работе в 3 квадранте, обеспечивается автоматическое уменьшение угла при переходе в 4-й квадрант.

Функциональная схема электропривода и его механические характеристики представлены на рис.2.16 и 2.17 соответственно. Силовая схема выполнена в виде реверсивного ТПН, содержащего 10 тиристоров. Применение реверсивного ТПН позволяет уменьшить время реверса при переходе из двигательного в тормозной режим, что важно для механизмов с активным статическим моментом. Для получения жестких механических характеристик, как в двигательном, так и в тормозном режиме используется обратная связь по скорости. Сигнал, пропорциональный скорости, подается на вход регулятора скорости РС с выхода тахогенератора Управление электроприводом осуществляется от командоаппарата КА, имеющего по три позиции в направлении подъема и спуска.

ТПН позволяет также осуществлять энергосберегающий режим при работе в 3-м квадранте механических характеристик (силовой спуск).

Электропривод с указанным ТПН не имеет обратной связи по току, что упрощает и удешевляет преобразователь.

При работе в направлении подъема блоком логики БЛ через блок оптронной развязки Б0Р1 включается группа тиристоров, обеспечивающая работу электропривода в направлении «Подъем». Работа на первых двух позициях происходит на характеристиках с обратной связью по скорости. При переходе на вторую позицию блоком логики включается контактор ускорения 1КМ4. Переход на третью позицию, где приводной электродвигатель работает вблизи номинальной скорости, осуществляется с примерно постоянным (не зависящим от статического) динамическим моментом. Сигнал с тахогенератора поступает в блок логики, который по достижении надлежащей скорости включает контактор ускорения 1КМ5. В процессе работы в направлении спуска на первой позиции включается группа тиристоров «Спуск> и электропривод разгоняется под действием двигательного момента. При изменении знака сигнала на выходе РС блоком логики производится переключение групп тиристоров, и электропривод переходит в режим торможения противовключением. На первых дв)ос позициях спуска в ротор электродвигателя включено полное сопротивление. Переход на третью позицию спуска груза осуществляется включением группы тиристоров «Спуск» и контактора 1КМ5. Контакторы ускорения включаются по команде от блока логики БЛ. Электропривод работает вблизи номинальной скорости в двигательном или генераторном режиме, в зависимости от массы груза. В процессе работы на третьей позиции спуска, как в двигательном, так и в генераторном режиме устанавливается энергосберегающий режим по закону, близкому к минимуму тока статора, с фиксированным значением угла *а*. В электроприводе используется бездуговая коммутация контакторов ускорения, электрическое торможение до скорости, близкой к нулю, с последующим наложением электрического тормоза. При переходе со 2-й позиции подъема на 3-ю позицию осуществляется ограничение пускового момента и тока по алгоритму, представленному на рис. 1. Устройство для формирования переходных процессов выполнено в аналоговой форме, схема его представлена на рис. 2.

Для механизмов горизонтального передвижения разработан электропривод на основе нереверсивного ТПН с контакторным реверсом и обратной связью по скорости. Применение нереверсивного ТПН позволяет повысить надежность электропривода, поскольку в случае выхода из строя

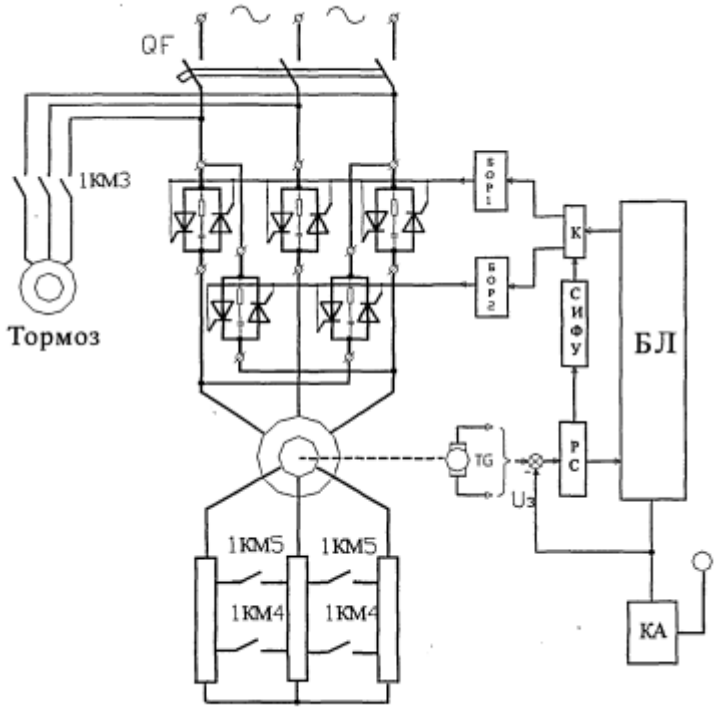

Рис. 1. Функциональная схема электропривода механизма подъема по системе ТПН-АД

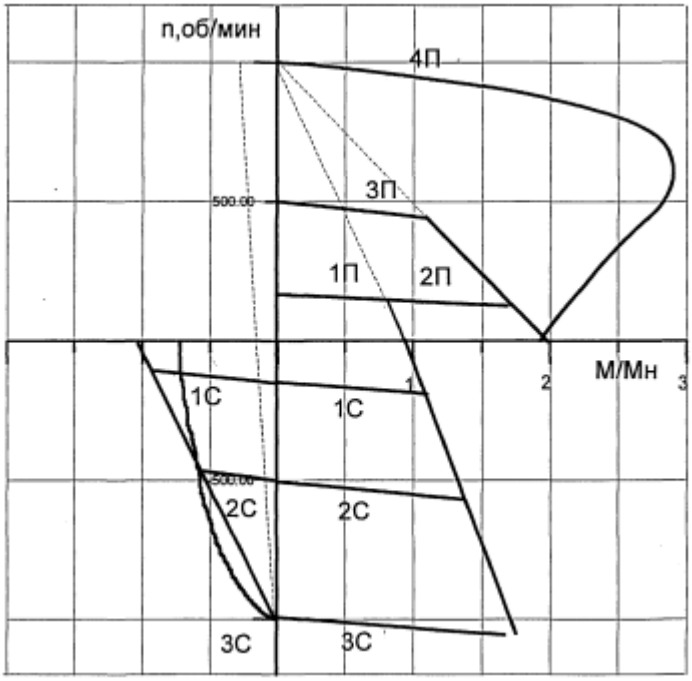

Рис. 2. Экспериментальные механические характеристики электропривода механизма подъема по системе ТПН-АД

ТПН имеется возможность работы на реостатных характеристиках в разомкнутой системе. Такой электропривод мощностью 15 квт был разработан с участием автора и установлен при модернизации механизма разворота сцены в Московском Музыкальном театре им. Станиславского и Немировича-Данченко. Выбор системы электропривода был обусловлен наличием асинхронного электродвигателя с фазным ротором и комплектом пускорегулирующих резисторов. Электропривод обеспечивает плавное регулирование скорости в диапазоне 8:1 и ограниче1ше пусковых и тормозных моментов на необходимом уровне. Разработанный электропривод успешно эксплуатируется в течение пяти лет.

Заключение: Результаты анализа и экспериментальных исследований подтверждают эффективность применения асинхронных электродвигателей в сочетании с тиристорными преобразователями напряжения для управления крановыми механизмами. Внедрение таких систем позволяет:

- существенно сократить энергопотребление;
- уменьшить износ механических узлов;
- повысить точность и стабильность управления;
- улучшить условия эксплуатации и безопасность.

Таким образом, модернизация существующих крановых электроприводов с использованием тиристорных преобразователей представляет собой перспективное направление в области повышения энергоэффективности и надежности подъемно-транспортного оборудования.

Использованные источники:

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ИСПОЛЬЗОВАНИЕ СИСТЕМЫ ТИРИСТОРНЫЙ ПРЕОБРАЗОВАТЕЛЬ НАПРЯЖЕНИЯ ДЛЯ ЭЛЕКТРОПРИВОДОВ КРАНОВЫХ МЕХАНИЗМОВ

Аннотация: *В данной статье рассматривается применение тиристорных преобразователей напряжения в системах электроприводов крановых механизмов. Повышенные требования к точности, надёжности и плавности управления подъёмно-транспортным оборудованием делают актуальным использование тиристорных преобразователей, обладающих высокой энергоэффективностью и возможностью тонкой настройки рабочих параметров. Проанализированы принципы работы тиристорных преобразователей, их конструктивные особенности и роль в обеспечении плавного пуска, торможения и регулирования скорости электродвигателей кранов. Отдельное внимание уделено преимуществам тиристорных систем перед традиционными методами управления электроприводами, а также вопросам экономии электроэнергии и увеличения срока службы оборудования.*

Ключевые слова: *тиристор, преобразователь напряжения, электропривод, крановый механизм, система управления, энергоэффективность, промышленная автоматика, тиристорное регулирование*

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USING A THYRISTOR VOLTAGE CONVERTER SYSTEM FOR ELECTRIC CRANE DRIVES

Abstract: *This article examines the application of thyristor voltage converters in crane mechanism drive systems. The increased requirements for precision, reliability, and smooth control in lifting and handling equipment make the use of thyristor converters highly relevant due to their high energy efficiency and fine adjustment capabilities. The principles of operation of thyristor converters, their design features, and their role in providing smooth start-up, braking, and speed control of crane motors are analyzed. Particular attention is given to the advantages of thyristor systems over traditional drive control methods, as well as to energy savings and increased equipment lifespan.*

Keywords: *thyristor, voltage converter, electric drive, crane mechanism, control system, energy efficiency, industrial automation, thyristor regulation*

Проблемы традиционных систем электропривода: Основные недостатки классических реостатно-контакторных систем:

- Высокие потери энергии из-за реостатного регулирования.
- Ограниченные возможности плавного управления скоростью.
- Высокий износ контакторов и механических элементов.
- Ограниченный срок службы оборудования.

Предложенное решение и его новизна

Использование системы тиристорно-понижающего напряжения (ТПН) в сочетании с асинхронным двигателем (АД) позволяет решить вышеуказанные проблемы. Основные преимущества данного решения:

- Энергоэффективность – снижение потерь энергии за счет плавного регулирования напряжения.
- Плавность регулирования – улучшенное управление скоростью движения крана.
- Уменьшение износа компонентов – сокращение количества механических коммутационных элементов.
- Автоматизация – возможность интеграции с современными системами управления.

Крановые электроприводы с тиристорными преобразователями напряжения можно условно разделить на две группы. К первой группе можно отнести электроприводы механизмов горизонтального передвижения кранов с асинхронными короткозамкнутыми двигателями без регулирования скорости. Такие электроприводы характерныв основном для механизмов передвижения башенных кранов и в ряде случаев для механизмов передвижения грузовых тележек башенных и мостовых кранов при невысокой номинальной скорости. Тиристорный преобразователь напряжения в этом

случае используется для формирования плавного пуска, например, электропривода механизма передвижения башенного крана .В

Электроприводе используется тиристорный преобразователь ТСУ-К

Совместно с релейно-контакторной панелью управления. Тиристорный преобразователь напряжения, выполненный по симметричной трехфазной схеме, включен в общую цепь статоров многодвигательного электропривода. Для реверсирования электропривода между ТПН и статорами электродвигателей включен контактный реверсор.

В случае выхода из строя тиристорного преобразователя предусмотрен

Комплект пускорегулирующих резисторов и шунтирующий контактор. Применение указанного электропривода позволило значительно уменьшить динамические нагрузки в механизме передвижения крана, возникающие припуске. Крометого, практически устраняются колебания башни крана при пуске механизма передвижения, что улучшает условия работы оператора. К недостаткам рассматриваемого электропривода следует отнести нерациональную конструкцию преобразователя ТСУ-К, требующего нескольких внешних источников питания, что значительно увеличивает габариты комплектного электропривода.

Сущность и преимущества системы ТПН-АД

Система ТПН представляет собой тиристорное устройство, регулирующее подачу напряжения на статор обмотки асинхронного двигателя. Это обеспечивает:

- Плавный пуск двигателя,
- Бесступенчатое регулирование скорости,
- Снижение пусковых токов,
- Улучшение точности позиционирования груза.

Преимущества внедрения системы ТПН-АД:

- Повышение энергоэффективности на 15–25%,
- Снижение эксплуатационных затрат за счёт уменьшения износа,
- Увеличение срока службы оборудования,
- Возможность интеграции в автоматизированные системы управления.

Практическая реализация и результаты

Для оценки эффективности системы ТПН-АД была проведена серия испытаний на нескольких крановых установках в производственных условиях. В качестве объекта исследования выбран мостовой кран грузоподъемностью 10 тонн, эксплуатируемый на металлургическом предприятии. Сравнительный анализ проводился между стандартной реостатно-контакторной схемой управления и модернизированной схемой с использованием ТПН-АД.

Методика испытаний

- Измерение времени разгона и торможения при различных нагрузках.
- Измерение потребляемой активной и реактивной мощности.
- Фиксация температуры обмоток двигателя после длительных циклов работы.
- Анализ уровня вибраций и механических нагрузок при включении/выключении.
- Оценка надежности работы при длительном многократном запуске/остановке.

Полученные результаты

Время пуска крана сократилось на 28–32% благодаря плавной регулировке напряжения, что уменьшило динамические удары на конструкцию.

Энергопотребление на один цикл подъема-снижения груза снизилось на 18–22%, что связано с уменьшением потерь в цепях управления и более рациональным использованием мощности двигателя.

Средняя температура обмоток двигателя при длительной работе снизилась на 10–15°C, что положительно сказалось на долговечности изоляции и общем ресурсе двигателя.

Уровень вибраций при запуске снизился на 40%, что минимизировало износ опорных частей и механических соединений.

Повысилась стабильность работы при различных нагрузках, в том числе при частичном недогрузке или перегрузке на кратковременных участках работы.

Дополнительные наблюдения

- За период опытной эксплуатации (6 месяцев) количество аварийных остановок сократилось на 60% по сравнению с предыдущей схемой управления.
- Персонал отметил улучшение управляемости механизмом и снижение утомляемости операторов за счет более предсказуемой реакции крана на команды.
- Эксплуатационные затраты на обслуживание (замена контакторов, реле и т.д.) уменьшились приблизительно на 30%.

Общий эффект от внедрения

Модернизация позволила достичь экономии электроэнергии в размере 15 000–17 000 кВт·ч в год на одну единицу оборудования, что приводит к значительному снижению затрат на эксплуатацию.

Планируется дальнейшее расширение применения системы ТПН-АД на других участках предприятия.

Выводы

Проведенные исследования и практическая эксплуатация системы ТПН-АД для электроприводов крановых механизмов подтвердили высокую эффективность предлагаемого технического решения.

Основные преимущества внедрения системы ТПН-АД заключаются в следующем:

- Значительное снижение энергопотребления и эксплуатационных затрат,
- Повышение плавности пуска и управления скоростью без сложных механических устройств,
- Снижение износа оборудования за счёт минимизации механических и электрических перегрузок,
- Увеличение срока службы электродвигателей и силовых элементов,
- Улучшение условий труда операторов благодаря более стабильной работе механизмов.

Таким образом, модернизация электроприводов крановых установок с использованием системы тиристорно-понижающего напряжения и асинхронных двигателей является обоснованным и перспективным направлением для промышленных предприятий, стремящихся к повышению эффективности, надежности и экономичности производственных процессов.

Дальнейшие исследования могут быть направлены на интеграцию систем ТПН-АД с цифровыми средствами управления для создания интеллектуальных крановых комплексов.

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БИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ И АГРАРНОЕ ЗНАЧЕНИЕ ДВУРЯДНОГО ЯЧМЕНЯ (HORDEUM DISTICHON): ОТ ИСТОРИИ ОКУЛЬТУРИВАНИЯ ДО СОВРЕМЕННЫХ СОРТОВ

Аннотация. *В статье представлен литературный обзор о зерновой культуре ячме́нь (Hórdeum). Ячмень двурядный, или Ячмень голозёрный (Hōrdeum dīstichon) — вид травянистых растений из рода Ячмень семейства Злаки (Poaceae). Этот ячмень называют «пивоваренным ячменём». У двурядного ячменя крупные полные зёрна с тонкой волнистой оболочкой. Колос ячменя двухрядного имеет два правильных рядов зёрен, зерно развивается только в среднем колоске с каждой стороны стержня. В ячмене содержится много ценных экстрактивных веществ и мало плёнок, дубильных и горьких веществ. Все зёрна одинаковые, содержание экстракта высокое. Двурядный ячмень, яровой, используют для приготовления солода и пива. Ячмень с богатой историей, является, важной сельскохозяйственной культурой.*

Ключевые слова. *Ячмень двурядный, голозерный, солод, пиво, плод зерновка, кроющие чешуйки, Уваровский ячмень, сорт Винер, шведская муха, ячневая крупа, перловая крупа (перловка), дикий ячмень (H. vulgare).*

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BIOLOGICAL CHARACTERISTICS AND AGRARIAN SIGNIFICANCE OF TWO-ROWED BARLEY (HORDEUM DISTICHON): FROM THE HISTORY OF CULTIVATION TO MODERN VARIETIES

Abstract. *The article presents a literature review of the grain crop barley (Hórdeum). Two-row barley, or naked barley (Hōrdeum dīstichon) is a species of herbaceous plant from the genus Barley of the family Cereals (Poaceae). This barley is called "brewing barley". Two-row barley has large full grains with a thin wavy shell. An ear of two-row barley has two regular rows of grains, the grain develops only in the middle spikelet on each side of the rod. Barley contains many valuable extractive substances and little film, tannins and bitter substances. All grains are the same, the extract content is high. Two-rowed barley, spring, is used for making malt and beer. Barley with a rich history is an important agricultural crop.*

Keywords. *Two-rowed barley, hulled barley, malt, beer, grain, covering scales, Uvarovsky barley, Wiener variety, Swedish fly, barley groats, pearl barley (pearl barley), wild barley (H. vulgare).*

Ячмень (Hordeum) — род растений семейства Злаки (Poaceae), один из древнейших злаков, возделываемых человеком [2]. Представлен однолетними, двулетними и многолетними травами. Листья в почке свёрнутые. Язычок короткий. Колоски одноцветковые, собранные пучками по 3—2 в верхушечный сложный колос. Колосковые чешуйки тонкие, щетинистые, сидящие крест- накрест с цветковыми чешуйками. Нижняя цветковая чешуйка с закрученной остью на верхушке. Плёнки косо яйцевидные, продолговатые.

Завязь на верхушке волосистая. Плод — зерновка, с широкой бороздкой, иногда срастается с кроющими чешуйками. Имеет длинные ости. Сейчас оси дают культурным растениям мало пользы. Нужны они были диким предкам для расселения и защиты. Голозерный попал в наши края в 19 веке. Ячмень с четырехгранным колосом называли *Небесным*, двухгранным - *Гималайским.* Оба родом из Гималаев. Из голозерного ячменя делают крупу высшего сорта. Раньше, лет сто назад землевладельцы сеяли его для собственного потребления и очень любили этот сорт. Голозерный имеет благородную желтизну, быстро варится. Каша получалась рассыпчатой, сладкой и нежной на вкус. Прошло полтораста лет. Наука ушла вперед.

В горах Таджикистана, в Коми, Красноярском крае выращивают голозерный ячмень Уваровский, он не боится морозов, не полегает. Давёт хороший урожай. Его любят воробьи. Пленчатый ячмень воробьи не трогают. Голозерный их привлекает богатым содержанием белка. Стали давать «гималайское» зерно курам, яица увеличились в размере, скорлупа стала прочнее. Российский сорт Винер, проработавший сто лет, был не прихотлив, не нуждался в слишком удобренной и ухоженной земле. Когда поднялась культура земледелия, колос Винера отяжелел, стал полегать. Двадцать лет работали селекционеры и получили от *Винера новый сорт Московский 121*. Удобрений на полях стало еще больше, уход за посевами лучше. Урожай увеличился. Стал полегать и Московский сорт. Селикционеры поработали и вывели ячмень обыкновенный (Hordeum vulgare) сорт пивоваренный «Сталый», ячмень мышиный (Hordeum murinum), ячмень гривастый (Hordeum jubatum). Озимый ячмень младше, чем яровой, на 2000 лет.

Много стран, что выращивают ячмень, переходят на озимые сорта. На осенний сев перешли Румыния и Болгария, больше половины площадей в Германии и Франции, много озимого ячменя сеют в Венгрии и Польше. На озимый ячмень приходится около 10 %. в мировом производстве зерна. В 2014 году площадь посева по всему миру составила 57,9 млн гектаров [13,14]. Общее производство в мире в 2016 году составило 141,3 млн тонн [13,14]. Ячмень ценная сельскохозяйственная культура, принадлежит к числу

древнейших культурных растений. Он был окультурен в эпоху неолитической революции на Ближнем Востоке более 10 тыс. лет назад [3].

Дикий ячмень (H. vulgare) произрастает на широком пространстве от острова Крит и Северной Африки на западе до Тибетских гор на востоке [4]. В Палестине, найдены доказательства что, ячмень употреблять в пищу начали 17 тыс. лет назад. Самые древние образцы культурного ячменя найдены в Сирии и относятся они к одной из древнейших неолитических культур до керамического периода. Ячмень найден в древних египетских гробницах и в остатках озёрных свайных построек в каменном и бронзовом периодах. На Корейском полуострове ячмень появился 1500—850 лет до н. э. [5]. В Европу ячмень попал из Малой Азии в IV—III тысячелетиях до н. э. В Россию ячмень проник из Азии, Сибири, Кавказа и имеет большое значение как пищевой продукт и по сей день. На американском континенте, ячмень, новая культура, её завезли переселенцы из Европы в XVI—XVIII веках. Ячменное пиво считается древнейшим напитком человека эпохи неолита [6]. Его использовали вместо валюты для расчётов с работниками. В Египте из ячменя готовили пиво, и хлеб.

Шумеры называли ячмень акити. В книге Второзаконие ячмень упоминается среди семи плодов земли обетованной. Книга Чисел описывает жертвоприношения израильтян, приносимые зёрнами ячменя. В Древней Греции богиня Деметра имела имя матери ячменя. А Плиний Старший описал рецепт ячменной каши в своей книге «Естественной истории». В Тибете мука из ячменя, цампа, стала употребляться в V века до н. э. [7][8]. В Европе хлеб изо ржи и ячменя был пищей крестьян, в то время как пшеничный хлеб потреблялся только высшим классом [9]. Лишь к XIX веку картофель постепенно заменил ячмень [1]. Путешествуя, по Гималаям, ещё Н.М. Прожевальский, писал в своих записках, «на высоте пяти тысяч метров над уровнем моря, местные жители сеяли ячмень, и собирали весьма хороший урожай. Ячменный хлеб на вкус сладковат, крошился, высыхал и быстро черствел». Высоко в горах ни рожь, ни пшеница не росли. Ячмень превзошел всех своей скороспелостью. Есть сорта, которые созревают за сорок восемь дней. Ячмень занял северные земли и высокогорье.

В Норвегии его высаживают вот уже двести пятьдесят лет, а это 70 градусов северной широты. Ячмень высаживают в Финляндии, под Верхоянском, на Аляске. Везде он вызревает за шестьдесят дней. Распознают ячмень по остям. Ости у ячменя обычно длинные, в два раза длиннее колоса и все, как одна, устремлены вверх. Ости работают как листья, участвуют в фотосинтезе. Благодаря остям урожай высокий. Есть ячмень и без остей, но у нас такие сорта почти не выращивают. Для ячменя на севере важно, не попасть в заморозки. На юге, успеть созреть до засухи. В наши дни рекорд урожайности по ячменю удерживает Голландия, Россия *(*Якутия). Почвы там холодные. Оттаивают только у поверхности.

Но якутские хлеборобы подготавливают пашню заранее. Добавляют навоз, куллтивируют. Вырастает урожай 12 тонн с гектара. До сих пор этот

рекорд остается заветной мечтой хлеборобов всего мира. Ячмень удивительное растение. Дальше всех — на север. Выше всех на юге. У ячменя много вредителей. До революции разведение ячменя сдерживала шведская муха, приносила большие убытки посевам.

В 30 годах, выведен сорт, который лучше всех противостоял вредному насекомому. Сорт Винер, работает и сейчас. Сейчас большие потери зерна наблюдаются от пленок, в которые упаковано ячменное зерно. Чтобы добраться до зерна, нужно очистить его от пленки. Только тогда выйдет перловая крупа. Зерно очищают, оно ломается и теряется почти половина ценного продукта.

Перерабатывающей промышленности это невыгодно, много отходов. Животных кормят не шлифованным зерном. Делают «Геркулес», но это дорого. Стали сеять голозерный. Это ячмень, который используют в азиатских горах, его видел Н. Пржевальский. У голозерного, свои недостатки, урожай меньше, зерно осыпается, не стоит в колосе. Широко распространено возделывание ячменя обыкновенного (Hordeum vulgare), другие виды возделываются изредка или они произрастают в диком виде. Ячмень относится к ценнейшим концентрированным кормам для животных, так как содержит полноценный белок, богат крахмалом. В Узбекистане на кормовые цели используют до 70 % ячменя. Из зёрен получают ячменную крупу двух видов: перловая и ячневая. **Ячневая крупа (ячка)** — это дроблёные (сечка) ячменные ядра, освобождённые от цветочных плёнок.

Ячневая крупа не подвергается шлифовке, в ней больше клетчатки. Используется для приготовления ячневой каши (молочной или на воде). ***Перловая крупа (перловка***) — это цельные ячменные зёрна, очищенные и шлифованные или нешлифованные. Своё название перловка получила потому, что цветом и формой напоминает речной жемчуг [11]. Используют как гарнир, а также для приготовления перловой каши (на воде, пару, молоке), добавляют в супы. Особенностью ячменной крупы является большое количество полисахарида β-глюкана, который, понижает холистерин, содержит провитамина А, витаминов группы В и микроэлементов: кальция, фосфора, йода, много кремниевой кислоты.

В народной медицине отвар ячменной крупы используют при воспалительных заболеваниях желудка и кишечника, как общеукрепляющее, обволакивающее средство после операций на органах брюшной полости. Согласно недавним исследованиям, употребление целых зёрен ячменя может регулировать уровень сахара в крови в течение 10 часов после потребления. Эффект объясняют спецификой ферментации медленно перевариваемых углеводов [12].

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СТРУКТУРНО-СЕМАНТИЧЕСКИЕ ОСОБЕННОСТИ ПАРЕМИЙ В РУССКОМ ЯЗЫКЕ

Аннотация: *В данной статье рассматривается Паремии, которые являются значительной частью фразеологического фонда русского языка. Это родовое понятие, включающее паремии, поговорки, присловья, приметы и др. Как правило, в паремиях сформулирована некая истина или побуждение (императив). Данные языковые единицы обобщают, часто в образной форме, коллективный жизненный опыт и отражают культурные установки и стереотипные представления общества, поэтому паремии представляют собой богатый материал для лингвокультурологических исследований.*

Ключевые слова*: паремии, культура, поговорки, присловья, приметы.*

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STRUCTURAL AND SEMANTIC FEATURES OF PAROEMIA IN THE RUSSIAN LANGUAGE

Abstract*: This article examines Paremia, which is a significant part of the phraseological fund of the Russian language. This is a generic concept that includes paremia, proverbs, sayings, signs, etc. As a rule, a certain truth or motivation (imperative) is formulated in paremia. These linguistic units generalize, often in a figurative form, collective life experience and reflect cultural attitudes and stereotypical ideas of society, therefore, paremia are rich material for linguacultural research.*

Keywords*: paremia, culture, sayings, sayings, signs.*

Многие ученые говорят о том, что в современной лингвистической науке наблюдается небывалый интерес к паремиологическому фонду языка. Термин «паремия» принято понимать в науке как собирательное название «воспроизводимых микротестов (преимущественно фольклорного характера)»[65], включающих паремии, поговорки, предметы, присловья, устойчивые этикетные формулы, загадки и т.п. Паремии отражают коллективный опыт народа, в них находят проявление традиционные для данного этноса ценностные ориентиры, стереотипные представления, поведенческие нормы и т.д. В некоторых исследованиях под «паремиями» понимают только паремии и поговорки, а часть ученых включают также присловья, загадки, приметы, афоризмы.

В современной науке большинство ученых, анализируя паремии и поговорки, следуют традиции, заложенной В.И. Далем. Например, Г.Л. Пермяков пишет, что для отделения собственно паремий от поговорок признак грамматической завершенности всегда считался решающим или по крайней мере очень существенным.

Эту точку зрения разделяет большинство исследователей, но главным является не столько грамматическое оформление, сколько смысловая законченность этих единиц. Как было сказано ранее, паремия основывается на неком суждении, а поговорка «получает окончательное оформление и конкретный смысл в контексте высказывания, т.е. является всегда только частью суждения»[66]. Что касается назидательности, поучения, то эта отличительная характеристика паремии признается современными учёными необязательной.

Термин «поговорки» необходимо осмыслить по-новому, обращая особое внимание на систематизированные признаки паремий и поговорок.

Принимая во внимание вышеперечисленные признаки паремии, мы можем сделать закономерный вывод, что паремия должна изучаться в двух плоскостях, а в частности: в лингвистике и в фольклоре. Отличия, отделяющие паремии от поговорок, условны, они образуют единую пословично-поговорочную группу языковых афоризмов.

Характерной особенностью паремии является тот факт, что, с одной стороны, она принадлежит системе языка, а с другой, тесно связана с конкретной речевой ситуацией, т.е. текстом. Исследователи неоднократно отмечали эту «парадоксальность», «действительность», «срединное положение», «амбивалентность» пословично-поговорочных изречений, позволяющую рассматривать их и как языковые, и как речевые знаки. Особенность паремии заключается в том, что она, как правило, несёт в себе информацию не об элементе, а о фрагменте внеязыковой действительности, что даёт возможность отнести паремии и поговорки к дискурсивным знакам. Г.Л. Пермяков, изучая структурный аспект паремиологии, также называл

[65] Подюков, 2019:5
[66] Русский язык. Энциклопедия, 1997: 347

паремии и поговорки знаками определённых ситуаций или определенных отношений между вещами. Однако несмотря на тесную связь семантики паремии с её конкретной реализацией в речи, данные единицы не могут быть рассмотрены только как элементы дискурса вне своего места в языковой системе, поскольку он представляют собой устойчивые, клишированные выражения, зафиксированные в словарях и фольклорных сборниках.

Кроме того, паремии как единицы языка характеризует их способность вступать в парадигматические отношения: синонимия (ср. Всякая лиса свой хвост хвалит; Всяк кулик своё болото хвалит.) антонимия (ср. Сам себя не хвали, жди, когда тебя другие похвалят.

Также важно понимать, что паремии и поговорки всё же обозначают не конкретную ситуацию, а некую модель, выделяя обобщенные черты, которые составляют стабильный набор признаков, способный выявляться в неограниченном количестве реальных жизненных положений. З.К. Тарланов пишет, что паремия не столько рассказывает о чем-либо конкретном, сколько напоминает о типичном. В этом паремия сближается с фразеологизмом и функционально-семантическом плане.

Паремии имеют достаточно много общих черт с фразеологизмами: это анонимность, устойчивость, раздельно оформленность, воспроизводимость, полная или частичная метафоричность и др. Е.И. Селиверстова также отмечает, что паремические единицы сближает с фразеологизмами их основная функция, которая заключается в том, чтобы служить средством повышения экспрессивности текста, средством выражения оценки и характеристики ситуации, эмоционального и-или прагматического отношения.

Вопрос о соотношении фразеологии и паремий по-прежнему остается дискуссионным в лингвистике. Большинство исследователей признают возможность отнесения пословично-поговорочных выражений к фразеологическому фонду языка при широком понимании последнего, сформулированном, например, в работе В.Н. Телии: «широкий объём фразеологии можно определить как все то, что воспроизводится в готовом виде, не являясь словом»[67].

Положительная коннотация крылатых единиц, репрезентирующих смысловые зоны «место рождения» и «страна, гражданином которой являешься», выравнивает оценочную асимметрию современного народного творчества. Крылатые единицы восполняют утрату смысловой зоны «место возникновения чего-либо» и с позиций оптимистического мировосприятия представляют смысловую зону «место комфортного существования».

Выявленные смысловые зоны сводимы к трём обобщенным группам: 1) государство, страна; 2) общество; 3) место возникновения или происхождения чего-либо. Первые две совпадают с ядерными сегментами концепта «Россия», третья является специфической для образа «Родина».

[67] Телия, 1996: 58

Кроме того, смысловая зона «государство, страна», являясь ядерным сегментом «научной» модели образа «Родина», входит в ядро «наивной» модели концепта, формируемой на основе современных паремий. В ядре концепта находится и сегмент «общество», детализируемый по различным критериям и направлениям. Другими словами, в центре «наивной» модели преобладают эмоции и оценки социально-экономических процессов и отношений как положительной, так и отрицательной модальности. В периферийное пространство концепта уходят и смысловая зона «место комфортного существования», и зона, характеризующая место возникновения или происхождения чего-либо.

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ЭНЕРГОЭФФЕКТИВНЫЕ ЗДАНИЯ ПРИ СТРОИТЕЛЬСТВЕ СОВРЕМЕННЫХ ЗДАНИЙ И СООРУЖЕНИЙ В УЗБЕКИСТАНЕ

Аннотация: *В статье рассматриваются вопросы проектирования и строительства энергоэффективных зданий в климатических условиях Узбекистана, характеризующихся высокой температурой воздуха, низкой влажностью и выраженным дефицитом природных ресурсов. Представлен обзор основных подходов к повышению энергоэффективности зданий, адаптированных под региональные особенности. Анализируются архитектурно-планировочные и инженерные решения, направленные на снижение теплопритоков и повышение термического комфорта при минимальном потреблении энергии.*

Ключевые слова: *энергоэффективность, устойчивое строительство, Узбекистан, сухой-жаркий климат, архитектура, пассивное охлаждение, тепловая защита, солнечная радиация.*

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ENERGY-EFFICIENT BUILDINGS IN THE CONSTRUCTION OF MODERN BUILDINGS AND STRUCTURES IN UZBEKISTAN

Abstract: *The article discusses the issues of designing and constructing energy-efficient buildings in the climatic conditions of Uzbekistan, characterized by high air temperature, low humidity and a pronounced shortage of natural*

resources. An overview of the main approaches to improving the energy efficiency of buildings adapted to regional peculiarities is presented. Architectural, planning and engineering solutions aimed at reducing heat flows and increasing thermal comfort with minimal energy consumption are analyzed.

Keywords: *energy efficiency, sustainable construction, Uzbekistan, dry-hot climate, architecture, passive cooling, thermal protection, solar radiation.*

Строительный сектор Узбекистана переживает этап активного роста, в том числе за счёт урбанизации, модернизации жилого фонда и реализации национальных инфраструктурных программ. В условиях сухого и жаркого климата, где летние температуры достигают 40–45 °C, энергоэффективность зданий становится важнейшим фактором устойчивого развития. Традиционные подходы к строительству, часто заимствованные из других климатических зон, не обеспечивают должного уровня теплового комфорта и приводят к чрезмерному расходу электроэнергии на кондиционирование. Это обостряет проблему энергодефицита, особенно в пиковые летние месяцы.

Климат Узбекистана относится к сухому континентальному типу с продолжительным жарким летом, холодной зимой и незначительным количеством осадков. В таких условиях здания испытывают значительное тепловое воздействие, особенно с южной и западной сторон. Расчётные температуры наружного воздуха летом нередко превышают +40 °C, а солнечная радиация достигает 700–800 Вт/м².

Основные проблемы:

- Высокий уровень **солнечных теплопритоков** через незащищённые фасады и остекление.
- Недостаточная **тепловая изоляция** существующих зданий.
- Широкое использование кондиционеров, что увеличивает **пиковую нагрузку на энергосистему**.
- Отсутствие **обязательных строительных норм**, адаптированных под специфику региона в части энергоэффективности.

Низкая энергоэффективность зданий не только снижает уровень комфорта, но и увеличивает нагрузку на инфраструктуру и экологическую нагрузку (за счёт роста выбросов CO_2 от производства электроэнергии). В связи с этим становится необходимым комплексный пересмотр архитектурных и инженерных решений с учётом местных климатических условий.

Для оценки влияния различных подходов к энергоэффективности были проанализированы данные по 15 зданиям (жилищного, офисного и образовательного назначения), построенным в Ташкенте, Бухаре и Нукусе в 2018–2024 гг. Часть объектов была спроектирована с использованием пассивных и активных мер по снижению энергопотребления, другие — по стандартным технологиям.

Сравнительные показатели:

Показатель	Традиционные здания	Энергоэффективные здания
Среднее годовое энергопотребление (кВт·ч/м²)	190–220	90–110
Температура в помещениях летом без кондиционера	34–36 °C	27–29 °C
Расход на охлаждение (% от общего энергопотребления)	55–60%	30–35%
Уровень комфорта (по опросу жильцов)	2,8/5	4,3/5

Используемые технологии:

- Толстые теплоизоляционные ограждающие конструкции (кирпич + утеплитель 10–15 см);
- Свободное проветривание и вертикальные шахты для естественной вентиляции;
- Защита от прямой солнечной радиации (навесы, экраны, растительность);
- Применение энергоэффективного стекла и жалюзи;
- Установка солнечных водонагревателей и панелей для питания освещения.

В условиях Узбекистана внедрение энергоэффективных решений в архитектурную и инженерную практику строительства становится не только экономически целесообразным, но и социально значимым. Опыт пилотных проектов показывает, что даже при умеренных инвестициях можно добиться значительного снижения энергопотребления и повышения комфорта. Энергоэффективность зданий напрямую влияет на устойчивость городской среды, экономику домохозяйств и надёжность энергосистемы страны.

Выводы: Энергоэффективное проектирование — ключевой инструмент адаптации строительства к условиям жаркого климата Узбекистана.

1. Основные ресурсы экономии — оптимизация тепловой защиты, пассивное охлаждение и эффективные инженерные системы.
2. Необходимы адаптированные строительные нормы, учитывающие климатическую специфику региона.
3. Повышение энергоэффективности должно стать обязательной частью государственной жилищной и градостроительной политики.

Внедрить национальные стандарты энергоэффективности для новых и реконструируемых зданий.

Поддерживать застройщиков через субсидии и налоговые льготы при применении энергоэффективных решений.

Развивать региональные учебные и исследовательские центры по устойчивой архитектуре.

Запустить пилотные проекты "умных" энергосберегающих кварталов в Ташкенте и других городах.

Внедрять цифровое моделирование (BIM, энергосимуляция) при проектировании зданий в экстремальных климатах.

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ОСОБЫЕ ПРОБЛЕМЫ ПРОЕКТИРОВАНИЯ ЗДАНИЙ И СООРУЖЕНИЙ В УЗБЕКИСТАНЕ

Аннотация: *В статье рассматриваются ключевые вызовы и особенности проектирования зданий и сооружений в Узбекистане с учётом специфики климата, сейсмической активности, водных и энергетических ограничений, а также историко-культурного контекста. Представлен анализ влияния природно-климатических, экономических и нормативных факторов на архитектурно-строительные решения. Предлагаются направления совершенствования проектной практики в целях повышения устойчивости, энергоэффективности и соответствия современным стандартам.*

Ключевые слова: *Узбекистан, проектирование, сейсмика, энергоэффективность, климат, урбанизация, строительные нормы, архитектура.*

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SPECIAL PROBLEMS OF DESIGNING BUILDINGS AND STRUCTURES IN UZBEKISTAN

Abstract: *The article examines the key challenges and features of designing buildings and structures in Uzbekistan, taking into account the specifics of climate, seismic activity, water and energy constraints, as well as the historical and cultural context. The analysis of the influence of natural, climatic, economic and regulatory*

factors on architectural and construction solutions is presented. The directions of improvement of design practice in order to increase sustainability, energy efficiency and compliance with modern standards are proposed.

Keywords: *Uzbekistan, engineering, seismic, energy efficiency, climate, urbanization, building regulations, architecture.*

Узбекистан, находящийся в зоне сухого континентального климата и повышенной сейсмической активности, представляет собой уникальную строительную среду, в которой проектирование зданий и сооружений должно учитывать множество факторов одновременно. Нарастающая урбанизация, ограниченность природных ресурсов и рост требований к устойчивому развитию создают особые вызовы для архитекторов и инженеров. При этом необходимо соблюдать баланс между технологичностью, экономичностью, безопасностью и сохранением культурного наследия.

Проектирование зданий и сооружений в Узбекистане осложняется рядом объективных факторов:

1. **Сейсмическая активность**

До 75% территории Узбекистана относится к зонам повышенной сейсмической опасности. Это требует от проектировщиков повышенного внимания к расчётам устойчивости, выбору конструктивных схем и применению специальных технологий сейсмостойкого строительства.

2. **Климатические условия**

– Высокие летние температуры (до +45 °C);
– Резкие перепады температур между днём и ночью;
– Дефицит влаги и воды.

Всё это создаёт необходимость в энергоэффективных архитектурных решениях, адаптированных фасадах, рациональной ориентации зданий, использовании локальных материалов.

3. **Историко-культурный контекст**

Города Узбекистана обладают богатым архитектурным наследием (Самарканд, Бухара, Хива), что требует согласования новых проектов с органами охраны памятников и соблюдения стилистической преемственности.

4. **Ограничения инфраструктуры**

Водоснабжение, электросети и транспортная инфраструктура часто не соответствуют требованиям к современным зданиям, особенно в периферийных регионах. Это ограничивает типологии застройки и требует локальных инженерных решений.

5. **Недостаток квалифицированных специалистов и цифровых инструментов**

Многие проектные бюро не используют BIM-моделирование, энергомоделирование и другие современные технологии, что снижает качество документации и увеличивает затраты.

Анализ данных

Для анализа ситуации были рассмотрены 20 строительных проектов (жилые, административные и общественные здания), реализованных в 2018–2024 гг. в городах Ташкент, Самарканд, Наманган и Нукус.

Выявленные тенденции:

Проблема	Частота возникновения (%)	Комментарии
Недостаточный сейсморасчёт	40%	Использование устаревших норм СНиП 1980-х годов.
Перегрев зданий летом	65%	Отсутствие солнцезащитных конструкций, стеклянные фасады без теплоизоляции.
Высокие затраты на кондиционирование	70%	Энергопотребление зданий в летний период превышает норматив на 30–50%.
Недочёты в проектной документации	50%	Отсутствие цифрового моделирования, ошибки в конструктивных узлах.
Нарушение исторического контекста	30%	Неуместная архитектура в зонах культурного наследия.

Проектирование зданий в Узбекистане требует учёта широкого круга факторов — от сейсмостойкости до энергоэффективности и архитектурной преемственности. Анализ реальных проектов показывает, что существующая практика не всегда отвечает современным вызовам, особенно в условиях климатических и сейсмических рисков. Устранение этих проблем возможно только при комплексном подходе: обновлении нормативной базы, внедрении цифровых технологий и подготовке кадров.

Выводы:

1. Узбекистан обладает уникальными природными и культурными условиями, что делает проектирование зданий особенно ответственным и сложным процессом.
2. Основные проблемы связаны с климатом, сейсмикой, ограничениями инфраструктуры и недостаточной цифровизацией проектной сферы.
3. Необходима модернизация проектных методик, использование BIM и адаптированных инженерных решений.
4. Требуется институциональное внимание к сохранению архитектурной идентичности в новых проектах.

Предложения:

Обновить нормативно-правовую базу проектирования с учётом сейсмики, климата и энергоэффективности.

Внедрить обязательное использование BIM и других цифровых инструментов при проектировании крупных объектов.

Ввести программы государственной поддержки "зелёного" и сейсмостойкого строительства.

Развивать региональные проектные школы с акцентом на локальную специфику.

Создать архитектурный совет при Минстрое РУ, курирующий проекты в исторических центрах.

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СОВЕРШЕНСТВОВАНИЕ ТАКТИКИ ПОСЛЕОПЕРАЦИОННОГО ВЕДЕНИЯ НОВОРОЖДЕННЫХ С АТРЕЗИЕЙ ПИЩЕВОДА

Резюме. *Колоэзофагопластика выполняется детям с атрезией пищевода с трахеопищеводным свищом или без него, рубцовыми стенозами и пептическими стенозами пищевода. Проводится загрудинная колоэзофагопластика с соблюдением основных принципов - изоперистальтический трансплантат на левой ободочной артерии, антирефлюксный анастомоз с желудком, точное соответствие длины трансплантата расстоянию между анастамозом на шее и желудком. Тяжесть послеоперационного периода обусловлена объемом и тактикой оперативного вмешательства, состоянием трансплантата, отеком в области проксимального анастамоза, нестабильной гемодинамикой, парезом кишечника, инфекционными осложнениями. В результате был разработан алгоритм послеоперационного ведения пациентов с колоэзофагопластикой.*

Ключевые слова: *колоэзофагопластика, по слеоперационный период, дети*

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IMPROVEMENT OF POSTOPERATIVE CARE TACTICS FOR NEWBORNS WITH ESOPHAGEAL ATRESIA

Abstract. *Colon esophageal replacement is carried out for esophageal atresia with or withot thracheoesophagial fistula or for corrosive and peptic oesophageal strictures. The principles of this procedure include an interpositioning the colonic conduit of the left colic artery and of a precise length between the created anastomes on the neck and the stomach. The early postoperative period after this complex procedure may be problematical due to hemodynamic instability,*

ileus, swelling of the distal anastomosis and wound infection. This article presents the algorithm elaborated for postoperative patient management after colon esophageal replacement.

Key words: *Colon esophageal replacement, intensive care, children*

Введение: в настоящее время выделяют две группы пациентов, требующих проведения пластики пищевода: дети с врожденной патологией пищевода (атрезия пищевода с трахеопищеводным свищом или без него, удвоение пищевода) и дети с приобретенны ми заболеваниями пищевода (химический ожог пищевода, пептический стеноз пищевода) [1-3]. В течение всего периода становления хирургической тактики по созданию искусственного пищевода была определена возможность формировать искусственный пищевод из желудка, тонкой или толстой 24 кишки [11]. По данным литературы, за рубежом наиболее часто выполняется пластика пищевода желудком, полагая это более физиологичным [13, 14]. Помимо этого, по данным литературы, осложнений значительно меньше наблюдается при га строэзофагопластике [6]. Возможно, дальнейшее совершенствование хирургической техники и методики приведет к тому, что колоэзофагопластику заменят пластикой пищевода желудком [9,10], но принципы базового послеоперационного лечения в послеоперационном периоде, вероятно, останутся прежними.

Анализ, проводимый в клинике, определил, что колоэзофагопластика толстой кишкой, выполненная по определенной технике, является оптимальной операцией. В последнее время в клинике внедряется пластика пищевода желудком как метод хирургического лечения патологии пищевода. При пластике пищевода тонкой кишкой в результате топографических особенностей достаточно часто отмечают неудовлетворитель ноекровоснабжение трансплантата [1]. С течением времени, усовершенствованием техники оперативного вмешательства, ростом опыта хирургов была выбрана определенная тактика операции, которая модернизировалась и которой придерживаются до настоящего времени. По мере накопления опыта появляется возможность проведения анализа результатов послеоперационного ведения пациентов с колоэзофагопластикой. Целями нашего исследования стали анализ и создание алгоритма послеоперационного ведения пациентов с колоэзофагопластикой. Материалы и методы В 2005-2010 гг. в отделении реанимации находился 101 ребенок после пластики пищевода. Из них 98 детям была выполнена колоэзофагопластика и 3 пластика пищевода желудком. Пластику пищевода желудком проводили детям с атрезией пищевода в возрасте от 2 до 11 месяцев. Они не были включены в исследование. Также из исследования были исключены дети, которым проводили реконструктивную операцию после колоэзофагопластики, выполненную в других клиниках. Из 98 детей 57 были с атрезией пищевода, 1 ребенок с удвоением пищевода и 40 детей с рубцовыми стенозами пищевода после химического ожога и с пептическими

стенозами пищевода. С каждым годом количество детей, которым проводилась колоэзофагопластика, увеличивалось. В 2023-2024 гг. было пролечено по 8 детей, тогда как в 20023 г. уже 12 детей, а в 2024 г. 20 детей. Возрастной состав: 4 меся ца -1 год (11 ребенок), 1-3 года (13 детей), 3-7 лет (6 детей), старше 7 лет - 7 детей [4]. Предоперационная подготовка включала лабораторный контроль (общий анализ крови, мочи, биохимический анализ крови, коагулограмму) и оценку микро биологического статуса пациента с чувствительностью к антибиотикам. Дополнительные диагностические мероприятия (УЗИ органов брюшной полости, рент генологическое исследование, по показаниям ЭХО-КГ и КТ). В последние несколько лет ЭХО-КГ проводится всем пациентам с атрезией пищевода с целью выявления сосудистых аномалий. Оценку и поддержание нутритивного статуса проводили по общепринятым стандартам, иммунокоррекциюна основании исходного иммунного статуса. Подготовка толстой кишки стала стандартом с начала применения колоэзофагопластики. Всем детям проводили загрудинную колоэзофагопластику с соблюдением основных принципов изоперистальтический трансплантат на левой ободочной артерии, антирефлюксный анастомоз с желудком, короткий трансплантат (точное соответствие его длины расстоянию между анастомозом на шее и желудком) [5]. После выполненного оперативного вмешательства по тяжести состояния все дети поступали в от делении реанимации для искусственной вентиляции легких (ИВЛ) в состоянии медикаментозного сна. Результаты исследования Тяжесть послеоперационного периода определяется объемом и тактикой оперативного вмешательства (проведение трансплантата за грудиной). Иногда наблюдается выраженное натяжение с возможным нарушением его кровоснабжения, возможно нарушение опорожнения трансплантата [7]. Все это влияет на тактику ведения больных при учете длительности миоплегии и седации. Пациент с выраженным натяжением трансплантата, нарушением его кровоснабжения и опорожнения, выраженными дыхательными нарушениями на этом фоне должен находиться в состоянии медикаментозного сна и миоплегии, что достигается применением наркотических анальгетиков с седативными препаратами, а иногда и миорелаксантами. Контроль кровоснабжения трансплантата осуществляется с помощью допплеровского ультразвукового исследования. Отек в области наложения проксимального анастомоза возникает практически в 100% случаев в раннем после операционном периоде. Это влияет на сроки экстубации больных в послеоперационном периоде, а также обусловливает механическое воздействие на трахею, что особенно важно у детей с атрезией пищевода, так как у них в большинстве случаев присутствует трахеомаляция. Практически у всех детей в раннем послеоперационном периоде (первые четверо суток) отмечается нарушение акта глотания, и возникает риск аспирации в дыхательные пути содержимого ротоглотки [8]. Механическое воздействие на перикард обусловлено давлением на него неопорожненным трансплантатом. Клинически это выражается в раз витии тахикардии. При этом повышаются

потребление миокардом кислорода, энергетические затраты, что требует адекватной оксигенации и поступления энергетически богатых субстратов. В большинстве случаев тахикардия уменьшается на 2-3-и послеоперационные сутки по мере восстановления функции трансплантата, уменьшения его объема. Оперативное вмешательство на толстой кишке (наложение межкишечного анастомоза после забора трансплантата) сопровождается парезом кишечника. Длительность нарушенного пассажа по кишечнику составляет примерно 3-4 суток. Воспалительные изменения, выражающиеся лихорадкой и лейкоцитозом, наиболее характерны для детей с химическими ожогами пищевода. У неоднократно оперированных детей наблюдается картина иммунодефицита. В предоперационном периоде им проводится иммуностимулирующая терапия, которая может продолжаться и в послеоперационном периоде. В связи с высоким расположением анастомоза на шее (он может быть и с глоткой) происходит инфицирование слюной. Для контроля за жизненно важными функция ми организма, течением послеоперационного пери ода, возможными осложнениями у каждого больного в послеоперационном периоде мониторируются следующие показатели: круглосуточный монитринг частоты сердечных показателей (ЧСС), неинвазивное артериальное давление (АД), насыщение гемоглобина кислородом (SaO2), мониторинг механических свойств легких (резистентность и комплайенс); оцениваются лабораторные показатели: общий анализ крови (один раз в 3-5 дней), общий анализ мочи (один раз в 3-5 дней), биохимический анализ крови (ежедневно), кислотно-основное со стояние (2 раза в сутки в плановом порядке и по показаниям). Наличие синдрома системной воспалительной реакции и эффективность антибактериальной терапии оцениваются на основании уровня прокальцитонина, С-реактивного белка и лейкоцитарной формулы. Оценка микробиологического и иммунного статуса для коррекции антибактериальной терапии и необходимости иммунотерапии. Осуществляется контроль отделяемого из желудка. Геморрагическое отделяемое может возникать при кровотечении из трансплантата либо из желудка. При наличии отделяемого черного или «грязного» цвета можно заподозрить некроз трансплантата. Отделяемое «застойного» характера подтверждает парез кишечника или может быть симтомом механической кишечной непроходимости. Рутинным является контроль за диурезом. На шее в области анастомоза в послеоперационной ране всегда находится резиновый выпускник, по которому может отделяться слюна при открытии свища, а также гнойное или геморрагическое отделяемое [12]. УЗИ органов брюшной полости и трансплантата в первые двое суток после операции проводится ежедневно, затем по мере необходимости. Вышеперечисленный мониторинг позволяет оценивать динамику состояния ребенка в послеоперационном периоде, вовремя распознать осложнения и скорригировать назначенную терапию. Интенсивная терапия в послеоперационном периоде

- Поддержание стабильных показателей гемо динамики. При тенденции к гипотонии проводится инфузия кардиотонических препаратов (допамин в дозе 4-6 мкг/кг/мин).

- ИВЛ в послеоперационном периоде проводится у всех пациентов. При стандартном течении после операционного периода вентиляция легких проводится в течение 2-х суток. Используется CMV/AC режим вентиляции со стандартными параметра ми: частота принудительных вдохов соответствен но физиологической, соотношение вдох: выдох = 1: 2, дыхательный объем (ДО) из расчета 6-8 мл/кг массы тела. Непосредственно после операции этого ДО может не хватать для поддержания адекватной вентиляции легких в результате их низкой эластичности и высокой резистентности. В этих случаях ДО увеличивают до 10 мл/кг массы тела либо осуществляют переход на режим вентиляции с контролем по давлению с пиковым давлением 20-25 см вод. ст. Адекватность вентиляции оценивается по экскурсии грудной клетки, аускультации, SaO2, газовому составу крови. При длительной ИВЛ синхронизация проводится с помощью наркотических анальгетиков (промедол 1%-0,2 мг/кг/ч, фентанил 0,005% -3-5 мкг/кг/ч), седативных препаратов (реланиум0,5%-0,2 мг/кг, дормикум-0,2 мг/кг) или миорелаксантов (ардуан, тракриум). Чаще всего в раннем послеоперационном периоде может возникать ослабление дыхания слева, вероятно, связанное с расположением трансплантата. По показаниям проводится рентгенологический контроль, на котором определяют состояние легочной ткани, а также расположение и форма трансплантата.

Перевод на вспомогательную вентиляцию лег ких (ВВЛ) осуществляется на 1-2-е послеоперационные сутки (24-36 ч) при соблюдении следующих условий: стабильная гемодинамика, наличие самостоятельного дыхания, снижение доз наркотических анальгетиков и седативных препаратов. Обязательным условием является отсутствие патологического содержимого в плевральных полостях, отсутствие медиастенита, симптомов «острого живота». Применяется триггерная ВВЛ с чувствительностью триггера по потоку и поддержкой давлением (Pressure support ventilation - PSV).

-Перевод на спонтанное дыхание и экстубация. На спонтанное дыхание ребенок переводится на 3-4-е послеоперационные сутки. Сначала это всегда самостоятельное дыхание с поддержкой давлением (PSV) с постепенным снижением давления поддержки до 10-12 см вод. ст. Затем осуществляется перевод на самостоятельное дыхание через интубационную трубку увлажненной и согретой кислородно-воздушной смесью. Раннюю экстубацию не проводят в связи с отеком в области наложения проксимального анастомоза. Экстубируют пациента на 4-5-е послеоперационные сутки.

- Инфузионная терапия осуществляется по физиологическим потребностям и патологическим потерям. Используются растворы глюкозы (5-10%), кристаллоидных препаратов (физиологический раствор, стерофундин, ионостерил), реамберин. При тенденции к гипотонии

применяется инфузия коллоидных препаратов (инфукол (6% и 10%), волювен (6% и 10%), стабизол (6%)). Проводят коррекцию электролитов по данным биохимического исследования и КОС с использованием растворов калия хлорида, магнезии, препаратов кальция. Объем инфузионной терапии уменьшается при назначении парентерального питания и энтеральной нагрузке.

-Обезболивание. С первых послеоперационных суток все дети получают инфузию наркотических анальгетиков (промедол 0,2 мг/кг/ч) с постепенным снижением дозы. Каждые сутки доза снижается на 0,5мг/кг/ч - до 0,05 мг/кг/ч. У детей старше одного года после 0,1 мг/кг/ч осуществляется переход на инфузию трамала (0,2 мг/кг/ч).

-Парентеральное питание осуществляется с первых послеоперационных суток при стабильной гемо динамике и нормальном азотистом балансе. Первым компонентом являются аминокислоты. Начальная дозировка 0,5 г/кг с постепенным ее увеличением до 2,5 г/кг. Вторым компонентом являются жиры, которые вводятся со 2-х послеоперационных суток. Начальная доза 0,5 г/кг с увеличением до 4 г/кг. Но чаще всего максимальные дозы компонентов парентерального питания не используются, так как появляется возможность проведения энтерального питания, и дети готовы к переводу в хирургическое отделение.

- Энтеральное питание проводится в гастростому при соблюдении нескольких условий: нормальное функционирование трансплантата (отсутствие патологического содержимого, выделяющегося из трансплантата в желудке), отсутствие застойного отделяемого из желудка, адекватный пассаж по кишечнику. Примерно в 60% случаев энтеральную нагрузку начинаем с введения глюкозо-солевой смеси в качестве энтеротерапии. Этот метод при меняется у детей в возрасте от 4 месяцев до 3-х лет. Через сутки переходят на антирефлюксные смеси. У детей старшей возрастной группы энтеральное питание начинается с антирефлюксных смесей с последующим переходом на сбалансированные питательные смеси (Pediasure).

- Стимуляция работы кишечника проводится с 3-х послеоперационных суток введением растворов кальция и натрия хлорида и прозерина. Обсуждение результатов исследования Собственные результаты исследования показывают, что с течением времени количество детей, которым проводится колоэзофагопластика, растет. За такой же период времени, но в 1994-1998 гг. колоэзофагопластику выполнили 46 детям [5], т.е. практически на 50% меньше по сравнению с анализируемым периодом. В большинстве это дети поступают в клинику из других городов. Как и в прошлые годы, превалируют пациенты с атрезией пищевода. С накоплением опыта выстраивается определенная последовательность действий при лечении этих пациентов в раннем послеоперационном периоде. Эти пациенты требуют не только врачебного контроля, но и специфического ухода и внимания со стороны среднего медицинского персонала. Необходимы тщательный уход за послеоперационной раной на шее, особенно при

возникновении свища, открывающегося наружу, за гастростомой с целью профилактики мацерации и воспалительных изменений. Возраст детей представлен широким диапазоном, что также вносит свои коррективы в послеоперационное ведение пациентов. В предоперационном периоде про водятся очистительные клизмы, что является очень неприятной процедурой для ребенка. Клинические исследования у взрослых пациентов, пилотные исследования у детей не показали никаких преимуществ предоперационной подготовки толстой кишки [6]. Некоторые авторы считают, что инфицирование послеоперационных ран происходит из-за предоперационной подготовки толстой кишки и что достаточно интраоперационного механического орошения кишки [6]. В послеоперационном периоде дети в возрасте от 4-х месяцев до 1 года находились на лечении в отделении реанимации дольше, чем дети другой возрастной категории [15]. Сроки экстубации у пациентов в этом возрастином периоде также соответствовали 5-6-м послеоперационным суткам, в отличие от другой возраст ной категории, где экстубация была на 4-5-е сутки. В нашей клинике в 1994-1998 гг. экстубацию проводили на 2-3 послеоперационные сутки [5]. Но с накоплением опыта было решено не проводить ранних экстубаций трахеи в связи с высоким процентом повторных интубаций из-за выраженной дыхательной недостаточности на фоне отека верхних дыхательных путей. При анализе гемодинамических показателей определили, что в раннем послеоперационном периоде в кардиотонической поддержке нуждается всего 5% детей. Ее цель - не только коррекция артериального давления, но и улучшение микроциркуляции, а также стимуляция почечного кровотока. Количество тяжелых осложнений, таких как некроз трансплантата и медиастенит, в последние годы значительно уменьшилось. Свищ в области проксимального анастомоза встречается в 35% случаев, стеноз проксимального анастомоза в 22% случаев, что соответствует данным мировой литературы [8, 16]. Таких грозных осложнений, как пневмоторакс или перикардит не отмечалось [12]. Таким образом, несмотря на достаточно большой срок применения колоэзофагопластики у детей с различной патологией пищевода, большое количество данных по хирургической тактике, до сих пор сохраняются вопросы по лечению этих пациентов в раннем послеоперационном периоде с точки зрения реаниматолога. Возможно, дальнейшее совершенствование хирургической техники и методики приведет к тому, что колоэзофагопластику заменит пластика пищевода желудком [9, 10], но принципы базового послеоперационного лечения в послеоперационном периоде, вероятно, останутся прежними. В результате проведенного анализа был разработан алгоритм ведения пациентов с колоэзофаго пластикой в раннем послеоперационном периоде при неосложненном течении. 1-е п/о сутки (0-24 ч). ИВЛ в режиме CMV, IPPV, A/C с управляемым давлением или объемом. Инфузионная терапия из расчета физиологической потребности и патологических потерь соответственно возрасту и учетом интраоперационной инфузионной терапии.

Обезболивание наркотическими анальгетиками (промедол 1%-0,2мг/кг/ч).При необходимости длительного проведения ИВЛ и создания миоплегии при менять фентанил 0,005% - 3-5 мкг/кг/ч. Седативная терапия: реланиум 0,5% -0,2 мг/кг, дормикум -0,2 мг/кг на разовое введение. При склонности к гипотонии следует начать инфузию допамина 0,5% в дозе 4-6 мкг/кг/мин. Гемостатическая терапия: этамзилат 12,5% (0,5-1 мл 3 раза в сутки для детей до года и 1-2 мл 3 раза в сутки для детей старшего возраста). Контрикал в случае выраженного геморрагического отделяемого по гастростоме или из послеоперационной раны. Антацидные препараты (лосек, квамател). Антибактериальная терапия: цефалоспорины III поколения + аминогликозиды + метронидазол. Если антибактериальная терапия была начата в хирургическом отделении, она продолжается до получения результатов микробиологического статуса. 1-2-е п/о сутки (24-48 ч). Перевод пациента на ВВЛ с учетом состояния гемодинамики, наличия самостоятельного дыхания, показателей КОС. Инфузионная терапия по физиологическим потребностям и патологическим потерям. Парентеральное питание: аминокислоты из расчета 0,5 г/кг/сут. Продолжить гемостатическую и антацидную терапию. Обезболивание со снижением дозы наркотических анальгетиков (промедол 1%-0,15 мг/кг/сут). При тяжелом течении послеоперационного периода (неудовлетворительное состояние трансплантата по данным УЗИ, нарушение проводимости дыхания, низкая SaO2 , гипоксемия, гиперкапния) продолжить ИВЛ с седативной терапией. Антибактериальная терапия. 2-3 п/о сутки (48-72 ч). Продолжается ВВЛ с постепенным переходом на CPAP (самостоятельное дыхание с постоянным положительным давлением) с поддержкой давлением (PSV) с учетом состояния гемодинамики, наличия самостоятельного дыхания, показателей КОС. PSV следует начинать с 16-18 см вод. ст. с постепенным снижением до 12-10 см вод. ст. Объем инфузионной терапии уменьшается за счет увеличения объема парентерального питания. К аминокислотам 1 г/кг/сут прибавляются жиры из расчета 0,5 г/кг/сут. Продолжаются гемостатическая и антацидная терапия. Стимуляция желудочно-кишечного тракта (ЖКТ) прозерином. Обезболивание: промедол 1%-0,1 мг/кг/сут. Коррекция антибактериальной терапии. 3-4 п/о сутки (72-96 ч). Перевод больного на самостоятельное дыхание через интубационную трубку увлажненной и согретой кислородно-воздушной смесью. Парентеральное питание: аминокислоты 1,5 г/кг/сут, жиры -1,0 г/кг/сут. Инфузионная терапия с меньшим объемом. При наличии пассажа по ЖКТ и отсутствии патологического отделяемого по гастростоме начать энтеральную нагрузку в минимальном объеме. Продолжить гемостатическую терапию со снижением дозы препаратов. Обезболивание: промедол 1%-0,05 мг/кг/сут у детей до 1 года и трамал 5%-0,2 мг/кг/сут для детей старше 1 года. Стимуляция ЖКТ прозерином или солевая стимуляция. Антибактериальная терапия. 4-5 п/о сутки (96-120 ч). Экстубация больного. Оксигенотерапия через носовые канюли или лицевую маску. Увеличение энтеральной нагрузки. Уменьшение

объема инфузионной терапии. Продолжить парентеральное питание в той же дозировке либо увеличить ее на 0,5 г/кг/сут при минимальной энтеральной нагрузке. Снижение дозы обезболивающих препаратов с последующей их отменой. Антибактериальная терапия. 5-6 п/о сутки (120-144 ч). Перевод больного в хирургическое отделение.

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ОЦЕНКА БОЛИ У НОВОРОЖДЕННЫХ И ДЕТЕЙ РАННЕГО ВОЗРАСТА

Резюме. *В обзорной статье отображены исторические аспекты формирования представлений о боли у новорожденного ребенка. Представлены основные идеи научных работ, отражающие возможные последствия болевого синдрома. Приведены существующие шкалы оценки болевого синдрома у новорожденных и детей раннего возраста.*

Ключевые слова: *боль, новорожденный ребенок, ноцицептивная система.*

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PAIN ASSESSMENT IN NEWBORNS AND YOUNG CHILDREN

Abstract. *The review article reflects the historical aspects of the formation of ideas about pain in a newborn child. The main ideas of scientific works reflecting the possible consequences of pain syndrome are presented. The existing scales for assessing pain syndrome in newborns and young children are given.*

Key words: *pain, newborn child, nociceptive system.*

Боль- неприятное сенсорно-эмоциональное переживание, связанное с истинным или потенциальным повреждением тканей [4].

Долгое время бытовало мнение, что дети устойчивы к болевому воздействию, а польза от проводимой лечебной процедуры значительно важнее, чем эмоциональная реакция ребенка [2]. До середины 1970-х годов адекватную анальгезию в неонатальном периоде не проводили, исходя из убеждения о незрелости периферических болевых рецепторов, неполной миелинизации проводящих нервных волокон [3, 4].

Исследования последних лет показали, что болевые воздействия вызывают у детей патологические реакции. К их числу относятся такие нарушения, как энурез, потеря недавно сформировавшихся навыков, перевозбуждение, трудности засыпания, ночные кошмары, негативные эмоциональные реакции, избегающее поведение ребенка [1]. У новорожденных, которые подвергались обрезанию без анестезии, отмечалась более сильная реакция дистресса при обычной иммунизации в возрасте 4 и 6 месяцев по сравнению со сверстниками, не подвергшимися обрезанию или перенесшими обрезание под местной анестезией [10]. Работы Anand и соавт. показали, что у недоношенных новорожденных после хирургического вмешательства с минимальной анестезией возникали более сильные ответные реакции (возрастание концентрации катехоламинов, глюкагона, кортикостероидов), у них наблюдалось больше послеоперационных осложнений, выше оказывалась смертность по сравнению с группой новорожденных, получивших полную анестезию. McCrath и Unruh доказали, что незрелость новорожденных касается не их способности переживать боль, а исключительно неспособности сигнализировать о ней взрослым [6, 7].

Во время и после болевого воздействия отмечается повышение артериального давления (АД), изменение частоты (ЧСС) и ритма сердечных сокращений, частоты и механики дыхания, при длительном плаче ребенка возможно повышение внутричерепного давления [4].

Боль является одной из рано формирующихся психофизических функций, связанной с самыми «древними» структурами мозга. Все нейрофизиологические компоненты, необходимые для восприятия боли новорожденным ребенком, имеются у плода уже с середины гестационного периода. Незавершенная миелинизация вовсе не подразумевает отсутствие функции, а лишь немного замедляет время передачи импульсов, что компенсируется более короткими межнейронными расстояниями. Поэтому анестезиолог всегда должен помнить, что новорожденные, даже глубоко недоношенные, способны испытывать боль и реагируют на нее гипертензией, тахикардией, увеличением внутричерепного давления, выраженной нейроэндокринной реакцией. Более того, болевой порог у новорожденных значительно ниже, чем у старших детей или взрослых. Маленький ребенок не может локализовать боль, и ответная реакция имеет более диффузный характер, быстро истощая компенсаторные возможности. При этом в первую очередь нарушается нормальное функционирование системы дыхания и кровообращения [4].

Причин возникновения боли даже у новорожденных детей может быть множество, и свидетельствовать они могут о различных заболеваниях: родовой травме, гнойно-воспалительных заболеваниях, некротическом энтероколите, остеомиелите, менингоэнцефалите, гидроцефалии, врожденных пороках развития. Кроме того, появление

боли может быть связано с медицинскими манипуляциями и оперативными вмешательствами [8].

Субъективный характер боли делает ее трудноизмеримым понятием. Особенно это касается тех, кто не может выразить свою боль словами. Вот почему важную роль в распознавании и оценке болевого синдрома у новорожденного играет способность врача правильно интерпретировать клинические данные. С этой целью разработано несколько шкал оценки болевого синдрома, в основе которых лежат физиологические и поведенческие реакции новорожденного в ответ на болевое раздражение.

Первыми клиническими симптомами «болевого прорыва» у новорожденного ребенка являются на рушение сна, беспокойство и плач, затем повышается ЧСС и артериальное давление, уменьшается дыхательный объем и жизненная емкость легких, снижается сатурация (табл. 1).

Оценить выраженность болевых реакций можно с помощью оценочных шкал, использующихся в неонатальной анестезиологии.

Одной из наиболее популярных шкал оценки боли у новорожденных является шкала DAN (Douleur Aiguedu Nouveau-ne). Она используется для оценки острой и хронической боли у новорожденных по внешним признакам (табл. 2) [9].

Еще один метод, разработанный для использования у младенцев и детей до 7 лет, называется «Лицоноги активность плач утешаемость» (FLACC: face, legs, activity, cry, consolabylity). Этот метод оценивает боль по пяти поведенческим признакам, соответственно -выражению лица, движению ног, подвижности, плачу и утешаемости (табл. 3).

Шкала CRIES (табл. 4) разработана для использования у новорожденных с 32 недель гестационного возраста до 6 месяцев.

Таблица 1. Ответ новорожденного на боль

Физиологические реакции	Изменение поведения	Гормональные изменения	Вегетативные реакции	Движения тела
Повышение ЧСС, артериального давления, частоты дыхания, потребления кислорода, мышечного тонуса, внутричерепного	Резкий, пронзительный плач, зажмуривание глаз, углубление носогубной складки, опускание бровей, заостренность углов	Повышение концентрации кортизола, катехоламинов, глюкагона, соматотропного гормона, ренина, альдостерона,	Мидриаз, появление капель пота на лице, покраснение, бледность или «мраморность» кожи	Сжатие кистей рук в кулак, резкое сгибание и разгибание ног, дугообразный изгиб туловища, запрокидывание головы

давления	рта, сморщивание лба	антидиуретического гормона. Снижение секреции инсулина		

Таблица 2. Шкала оценки боли DAN

Что оцениваем	Описание	Баллы
Выражение лица	Спокойное	0
	Хнычет, то открывает, то закрывает глаза без гримасы	1
	Страдание на лице отражается несильно, бывают периоды возврата к спокойствию	2
	Страдание на лице выражено сильнее	3
	Очень сильные проявления страдания	4
Движения конечностей	Спокойные, мягкие движения	0
	Интенсивность движений небольшая, отмечаются периоды возврата к спокойствию	1
	Интенсивность умеренная	2
	Интенсивность очень высокая, движения без перерывов	3
Самовыражение голосом (ребенок не интубирован)	Нет жалобных нот	0
	На короткое время появляются жалобные ноты	1
	Плач с перерывами	2
	Длительный плач с выражением безутешности	3
Самовыражение голосом (ребенок интубирован)	Нет жалобных нот	0
	Выглядит встревоженным или неспокойным	1
	Всхлипывания с перерывами	2
	Непрерывные всхлипывания	3
Суммарный балл		

Примечание: *минимальный суммарный балл равен 0, максимальный-10. Чем больше полученное число, тем больший дискомфорт испытывает малыш.*

Каждый из пяти показателей этой шкалы (плач, потребность в кислороде при сатурации ниже 95 %, повышение АД и ЧСС, выражение лица и сон) оценивается от 0 до 2 баллов.

Для оценки степени боли в послеоперационном периоде используют следующие методы:

1. Шкала CHEOPS (табл. 5) [10], которая включает в себя следующие категории: крик (1), гримаса (2), вербальный ответ (3), тонус мышц спины (4), активность в ответ на прикасание к хирургической ране (5) и движения ног (6). Каждый признак оценивается в баллах от 0 до 3. Первоначально шкала CHEOPS использовалась только у детей от 1 до 7 лет.
2. Объективная шкала боли (OPS) является достоверным и надежным методом оценки боли (табл. 6) [10]. В OPS оцениваются артериальное давление (1), крик (2), движение (3), возбуждение (4) и вербализация (5). Каждый параметр оценивается в баллах от 0 до 2. Особенность данного метода в том, что он включает оценку состояния

сердечно- сосудистой системы как фактора боли в послеоперационном периоде. Однако одновременно могут присутствовать другие причины, которые влияют на гемодинамику у ребенка. Шкала OPS чаще используется для оценки боли у детей старше 1 года, у новорожденных - редко, что связано с неспособностью вербально выразить боль.

3. Более часто для оценки боли у новорожденных, которые находятся на искусственной вентиляции легких (ИВЛ), используют шкалу COMFORT (табл.7). В ней оцениваются девять показателей: тревожность, беспокойство и ажитация, дыхательные нарушения, плач, физическая подвижность, мышечный тонус, мимический тонус, среднее артериальное давление и ЧСС [12]. Каждый показатель оценивается по шкале от 1 до 5. Суммарное значение может варьировать от 9 до 45. Значения от 17 до 26 свидетельствуют об адекватной седации и обезболивании.

Таблица 3. *Поведенческая шкала оценки боли FLACC: face, legs, activity, cry, consolabylity*

Балл	Выражение лица	Ноги	Активность	Плач/крик	Реакция на попытки успокоить
0	Неопределенное выражение или улыбка	Нормальное или расслабленное положение	Спокоен, положение тела обычное, движения не затруднены	Не плачет, не кричит, не стонет (в том числе во сне или когда только что разбужен)	В утешении не нуждается, расслабленный, довольный
1	Изредка хмурится, морщится или не проявляет интереса	Неспокойные, напряженные	Отталкивает, корчится, ерзает, напряжен	Периодически стонет, хнычет, иногда плачет, «жалуется»	Если приобнять, погладить, утешить — хорошо успокаивается, перестает плакать
2	Сильно морщится, зубы стиснуты, часто или постоянно дрожит подбородок	Брыкается или вытягивает ноги	Резко дергается или выгнулся дугой, застыл	Постоянно плачет, кричит или всхлипывает, часто «жалуется»	Поддается плохо или не поддается вообще. Не успокаивается

Примечания: *суммарный балл равен сумме по всем 5 пунктам. Минимальная сумма - 0, максимальная - 10. Чем больше суммарный балл, тем сильнее боль и дискомфорт у младенца.*

Таблица 4. Шкала оценки боли у детей раннего возраста CRIES

Балл	0	1	2
Плач	Не плачет или тихий плач	Громкий плач, но ребенок быстро успокаивается	Громкий длительный плач
Потребность в кислороде при сатурации ниже 95 %	Нет потребности	Потребность < 30 %	Потребность > 30 %
Повышение АД и ЧСС	В норме	Повышение до 20 % от ис- ходного	Повышение более 20 % от исходного
Выражение лица	Спокойное	Хмурится	Гримаса плача
Сон	Не нарушен	Часто просыпается	Резко нарушен

Оценка боли должна проводиться каждые 4-6 часов с документацией результатов. Для этого должен привлекаться обученный средний медицинский персонал.

Как же обстоят дела в диагностике боли у новорожденных с позиций доказательной медицины? С.А. Бочкаревой и А.Б. Пальчик (Санкт-Петербургская государственная педиатрическая медицинская академия) были обследованы две группы детей, в одной из которых болевое раздражение (внутримышечная инъекция) наносилось без предварительной анальгезии, а во второй место инъекции предварительно обрабатывали смесью местных анестетиков. Оценка болевого синдрома проводилась с помощью существующих оценочных шкал, применяемых в неонатологии. Исследование показало, что применение смеси местных анестетиков влияет на болевой ответ новорожденного: уменьшается продолжительность крика и флексорная реакция, наступает более быстрое успокоение, изменяются вегетососудистые показатели по данным пульсоксиметрии. Однако по большинству сравниваемых показателей (более 20) достоверных различий между группами не получено. Это скорее всего свидетельствует о том, что большинство рассматриваемых общепринятых болевых параметров не являются специфичными для болевого стресса у новорожденного, а служат показателями реакции новорожденного на внешнее вмешательство. Следовательно, значительная часть физиологических поведенческих показателей, принятых как возможные маркеры боли у новорожденного, не являются специфичными, а следовательно, на изменении этих параметров не может строиться корректная диагностика боли с позиций доказательной медицины [5]. Данное исследование убеждает в необходимости дальнейшей разработки специфичных и достоверных методов определения болевого синдрома у новорожденных.

Таблица 5. *Шкала оценки послеоперационной боли у детей CHEOPS*

Признак	Описание	Балл
Плач	Не плачет	1
	Стон	2
	Плач	2
	Крик	3
Лицо	Улыбка	0
	Спокоен	1
	Гримаса	2
Вербальный ответ	Положительный	0
	Отсутствует	1
	Жалобы на дискомфорт	1
	Жалобы на боль и другие жалобы	2
Тонус мышц спины	Нормальный	1
	Переменный	2
	Высокий	2
	Дрожь	2
	Вертикальный (прямой)	2
	Ограниченный	2
Активность в ответ на прикасание к хирургической ране	Ребенок не реагирует	1
	Тянется к ране, но не касается ее	2
	Прикасается к ране	2
	Руки ребенка ограничены в движениях	2
Движения ног	Нейтральные	1
	Сучит ногами	2
	Напряжение	2
	Стоит на коленях или согнувшись	2
	Сдержанные	2

Таблица 6. *Объективная шкала боли (OPS)*

Параметр	Описание	Баллы
Систолическое АД	Повышается < 20 % от предоперационного	0
	Повышается на 20–30 % от предоперационного АД	1
	Повышается > 30 % от предоперационного	2
Плач	Не плачет	0
	Соответствует возрасту и воспитанию	1
	Не соответствует возрасту и воспитанию	2
Движение	Расслаблен	0
	Беспокойный, постоянно двигается в постели	1
	Беспорядочные («дикие») движения	2
Возбуждение	Спит или спокоен	0
	Слегка возбужден, быстро успокаивается	1
	Возбужден, не успокаивается	2
Вербализация	Спит	0
	Не предъявляет жалобы на боль	0
	Не может локализовать боль	1
	Локализует боль	2

Таблица 7. *Шкала COMFORT*

Беспокойство	1. Глубокий сон 2. Поверхностный сон 3. Сонливость 4. Бодрствует, беспокойный 5. Крайне беспокойный
Тревожность	1. Спокоен 2. Небольшая тревожность 3. Тревожность 4. Сильная тревожность 5. Паническое состояние
Дыхательные нарушения	1. Нет кашля и спонтанного дыхания 2. Спонтанное дыхание, практически не реагирует на вентиляцию 3. Периодически кашель или сопротивление вентиляции 4. Активно дышит против вентилятора и/или регулярно кашляет 5. Сопротивление вентилятору, кашель или удушье
Плач	1. Дыхание тихое, не плачет 2. Рыдание или затрудненное дыхание 3. Стон 4. Плач 5. Крик
Физическая подвижность	1. Нет движений 2. Периодически легкие движения 3. Частые небольшие движения 4. Активные движения 5. Энергичные движения, включая туловище и голову
Мышечный тонус	1. Мышечного тонуса нет 2. Мышечный тонус снижен 3. Нормальный мышечный тонус 4. Повышение тонуса мышц, сгибание пальцев рук и ног 5. Выраженная ригидность мышц и сгибание пальцев рук и ног
Мимический тонус	1. Лицевые мышцы полностью расслаблены 2. Тонус лицевых мышц нормальный, нет выраженного напряжения 3. Напряжение некоторых мышц лица 4. Выраженное напряжение всех лицевых мышц 5. Мышцы лица искажены гримасой
Среднее артериальное давление	1. Артериальное давление ниже исходного уровня 2. Артериальное давление постоянно на исходном уровне Редко повышение на 15 % или более от исходного (1–3 в течение 2 минут на- блюдения) Частые повышения на 15 % или более от исходного (> 3 в течение 2 минут на- блюдения) 5. Устойчивое повышение на 15 % или более
ЧСС	1. Частота сердечных сокращений ниже базового уровня 2. Частота сердечных сокращений на исходном уровне Редкие повышения на 15 % или более от базовой линии (1-3 в течение 2 минут наблюдения) Частые повышения на 15 % или более от базовой линии (> 3 в

	течение 2 минут наблюдения) 5. Устойчивое повышение на 15 % или более

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ВЫБОР СТАРТОВОЙ ИНФУЗИОННОЙ ТЕРАПИИ У ДЕТЕЙ В РАННЕМ ПОСЛЕОПЕРАЦИОННОМ ПЕРИОДЕ

Резюме: *Выбор препарата стартовой инфузионной терапии в раннем послеоперационном периоде актуален с позиции клинической эффективности, определяющей также и экономическую целесообразность комплекса лечебных мероприятий.*

Цель исследования: *Сравнительная оценка сукцинат содержащего раствора и раствора 0,9% NaCl в качестве препарата стартовой инфузионной терапии в раннем послеоперационном периоде у детей.*

Материалы и методы: *Провели проспективное рандомизированное исследование методом случайной выборки у 43 пациентов с оценкой по ASA II–III после плановых хирургических вмешательств, длительностью 1–3 часа. В 1-й группе «N», (n=23) дети в раннем послеоперационном периоде (в течение 3 ч после операции) получали непрерывную инфузию раствора 0,9% NaCl, во 2-й группе «R», (n=20) - инфузию в режиме 2,3 (1,6; 2,8) сукцинат содержащим раствором. Межгрупповое и внутригрупповое различие на этапах исследования оценивали по динамике водно-электролитного и кислотно-основного состояния (КОС), основного обмена и значений фазового угла - расчетного интегрального показателя состояния мембран клеточных структур. Данные регистрировали на 5 этапах исследования: 1 - сразу при поступлении в ОРИТ (исходные данные), 2- через 60 минут, 3 - через 90 минут, 4 - через 120 минут, 5 - через 180 минут от момента поступления в ОРИТ.*

Результаты: *Концентрация калия в плазме крови значимо различалась между группами через 60 (p=0,01) и 180 минут (p=0,04) после начала инфузии препаратов. В группе N на 2-м этапе отмечали снижение показателя на 7%, а в группе R увеличение на 2,1%, по отношению к исходному значению. К концу исследования концентрация калия снижалась в группе N на 6,9% и в группе R - на*

6,5%. Внутригрупповые различия были значимы в группе N на 2-м (p=0,02) и 5-м (p=0,01) этапах. В группе R ни на одном этапе не выявили значимых различий от исходных значений. Во всех случаях значения показателя находились в пределах референсных значений. В группе N на 2-м этапе содержание натрия достоверно повышалось от значений 1-го этапа на 2,1% (p=0,01). В группе R на 5-м этапе наблюдали значимое снижение содержания Cl^- на 2,7% (p=0,01). Динамика показателей КОС характеризовалась тенденцией к смешанному ацидозу на 2-м этапе в обеих группах, отмечали одинаковое значимое снижение pH на 1,3% от исходного значения, а к 5-у этапу - снижение pH было более выражено в группе N - на 1,2% от исходного значения, в группе R - на 0,9%, соответственно (p=0,01). В группе N выявили снижение значения фазового угла на 8,6% на 2-м этапе и на 6% к 5-у этапу исследования (p=0,01). В группе R значимых различий в динамике значений фазового угла не обнаружили.

Заключение: *Сукцинат содержащий раствор благоприятнее влияет на водно-электролитный баланс, КОС плазмы крови, состояние клеточных мембран в сравнении с раствором 0,9% NaCl.*

Ключевые слова*: инфузионная терапия, 0,9% NaCl, анестезия, дети, стартовый раствор, сукцинат.*

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CHOICE OF INITIAL INFUSION THERAPY IN CHILDREN IN THE EARLY POSTOPERATIVE PERIOD

Summary: *The choice of drug for initial fluid therapy in the early postoperative period is important in terms of clinical efficacy and cost-effectiveness of the combination treatment.*

The aim of the study: *was to compare the effects of a succinate-containing solution and 0.9% NaCl solution when used as a drug of initial intravenous fluid therapy in early postoperative period in children.*

Materials and methods: *A prospective randomized trial was conducted with participation of 43 patients having ASA II–III score after elective surgical interventions with a duration of 1-3 hours. In Group I («N») (n=23) the patients received continuous infusion of 0.9% NaCl solution in the early postoperative period (within 3 hours after the operation), in Group 2 («R») (n=20) continuous*

infusion of a succinate-containing solution was administered in 2.3 (1.6; 2.8) mode. The inter- and intragroup differences during the study were estimated by the changes of water-electrolyte and acid-base balance, basal metabolism, and phase angle (estimated integral index of cellular membranes condition) values. The data were recorded during the 5 stages of the study: 1 - immediately upon ICU admission (baseline), 2 - 60 minutes, 3 - 90 minutes, 4 - 120 minutes, 5 - 180 minutes after the ICU admission.

Results: *Significant differences in plasma potassium level between the groups 60 minutes (P=0.01) and 180 minutes (P=0.04) after the initiation of drugs infusion were found. In group N, at the 2nd stage, a 7% decrease in the potassium level was observed, while in group R, it increased by 2.1% as compared with the baseline. By the end of the study, potassium level decreased by 6.9% in group N and by 6.5% in group R. The intragroup differences were significant in Group N at the 2^{nd} (P=0.02) and 5^{th} (P=0.01) stages. In group R, no significant differences vs the baseline were found at any stage. In all cases, the values were within the reference values. In group N, at the 2^{nd} stage the sodium concentration increased compared with the 1^{st} stage by 2.1% (P=0.01). In group R, at the 5^{th} stage, a significant decrease of Cl^- concentration by 2.7% (P=0.01) was observed. The acid-base status showed a trend towards mixed acidosis at the 2^{nd} stage in both groups, with the similarly significant pH reduction by 1.3% vs the baseline, whereas at 5^{th} stage the decrease of pH was more significant in Group N (by 1.2% vs the baseline) than in Group R (by 0.9%) (P=0.01). In group N, the phase angle value was found to decrease by 8.6% at the 2^{nd} stage and by 6% at the 5^{th} stage (P=0.01). In group R no significant differences in the phase angle values were found.*

Conclusion: *The succinate-containing solution has more favorable effect on the water-electrolyte and blood acid-base balance, as well as the state of cell membranes compared with the 0.9% NaCl solution.*

Keywords*: anesthesia, children, initial solution, succinate, 0.9% NaCl, fluid therapy, Reamberin.*

Введение: Уже более 200 лет в клинической практике используется раствор 0,9% NaCl, исторически именуемый «физиологическим», но по сути таковым не являющийся. Значительное число работ, посвященных его применению и характеризующих его качества, свидетельствуют о нежелательности использования препарата ввиду его способности вызывать метаболический ацидоз и нарушать гемостаз при вливании больших объемов [1-3]. Тем не менее, упоминания о возможности его использования в инфузионной терапии не оспариваются в ряде клинических рекомендаций различных профессиональных национальных сообществ [4,5]. При этом сторонники применения в инфузионной терапии сбалансированных растворов представляют их преимущества

перед не сбалансированными, к каковым относится и 0,9% NaCl, однако не дают однозначного ответа, какой из них является препаратом выбора [2,6-8]. В частносьти имеются достаточные доказательства, что в педиатрии для поддерживаю-щей терапии предпочтительны изотонические внутривенные растворы, поскольку гипотонические могут приводить к гипонатриемии с сопутствующими неблагоприятными последствиями [1,6,9]. Более того, современные технологии fast track хирургии, в том числе и в детской практике, предусматривают значительную роль анестезиологического обеспечения в ранней активизации и восстановлении пациента после операции и анестезии [10]. В этом аспекте становится особо значима проблема подбора препаратов анестезии и сопутствующей терапии, к каковой относится введение инфузионных растворов, интраоперационно и в ранний послеоперационный период. Необходимо учитывать их способность оказывать минимальное угнетающее влияние на органы и системы, активизировать восстановление угнетенных анестезией и операцией функций. В связи с этим возможность применения в составе инфузионной терапии сукцинатсодержащих препаратов, к которым относится Реамберин, способный, по данным Мазиной Н. К. и соавтор. (2016), в качестве энергопротектора оказывать позитивное влияние на клинический исход [11], представляется актуальной и значимой. В другой работе эти жеавторы отмечают, что фармакологические свойства препарата позволяют повысить клиническую эффективность медицинских вмешательств и снизить затраты более, чем на 50%, за счет сокращения сроков госпитализации, снижения частоты осложнений, потребности в дорогостоящих медикаментах [10]. Положительное влияние Реамберина на антиоксидантную систему, доставку кислорода, реологические свойства крови, летальность при различных критических состояниях отмечают и другие исследователи [13, 14].

Таким образом, представляется актуальным рассмотреть возможность использования сукцинатсодержащего раствора Реамберин в качестве препарата стартовой инфузионной терапии в раннем послеоперационном.

Цель исследования: сравнительная оценка сукцинатсодержащего раствора и раствора 0,9% NaCl в качестве препарата стартовой инфузионной терапии в раннем послеоперационном периоде у детей.

Материал и методы: Провели проспективное рандомизированное исследование методом случайной выборки у 43 пациентов (ASA II-III) после плановых хирургических вмешательств, находившихся в отделении реанимации и интенсивной терапии (ОРИТ) АОДМПЦМ Минздрава Узбекистана в период с 10.2018 г. по 07.2019 г. Операции выполняли под общей комбинированной эндотрахеальной анестезией: индукцию проводили инсуфляцией севофлурана - 8-4 об.% (3,6-1,8 МАК) в потоке О2 100% 8 л/мин, фентанилом 0,05% внутривенно (в/в) болюсно 2 мкг/кг,

рокуронием - 0,6 мг/кг с последующей интубацией трахеи. В ряде случаев выполняли катетеризацию эпидурального пространства на уровне ThX-ThXI с эпидуральной аналгезией ропивакаином - 0,5% болюс из расчета 0,3 мл/кг. Под-держание анестезии во время операции: ингаляция севофлурана - 2,5 об.% в воздушно-кислородной смеси при O2 не более 40%, аналгезия постоянной инфузией фентанила - 0,05% в режиме 3 мкг/кг/ч в/в или ропивакаина - 0,2% в режиме 0,2 мл/кг/ч в эпидуральное пространство, миоплегия в/в рокуронием - 1% в режиме 0,6 мг/кг/ч. Всем пациентам проводили периоперационную инфузионную терапию кристаллоидным раствором Стерофундин с режимом инфузии 10-15 мл/кг/ч аппаратом Infusomat (B. Braun fms English 230 V).

В 1-й группе «N», (n=23), в раннем послеоперационном периоде (в течение 3 ч после операции) дети получали непрерывную инфузию 0,9% NaCl в режиме 2,9 (2,3; 3,8) мл/кг/ч, во 2-й группе «R», (n=20) - сукцинатсодержащего раствора Реамберин в режиме 2,3 (1,6; 2,8) мл/кг/ч через центральный или периферический венозный доступ. По оцениваемым показателям группы были сопоставимы между собой и не имели статистически значимых различий за исключением объема и режима введения исследуемых препаратов в ОРИТ, что было обусловлено ограничениями согласно инструкциям по их применению (табл. 1).

В исследовании оценивали: общую воду организма (ОВО), внеклеточную жидкость (ВнЖ) организма, внутриклеточную жидкость (ВЖ) организма, фазовый угол (ФУ) - арктангенс отношения реактивного и активного сопротивления для определенной частоты тока. Значение ФУ характеризует емкостные свойства клеточных мембран и жизнеспособность биологических тканей. Считается, что чем выше ФУ, тем «лучше» состояние тканей. Значения ФУ в диапазоне 5,4-7,8º классифицируются как нормальные, 4,4-5,4º - пониженные, менее 4,4º - низкие. Оценивали также основной обмен (ОО), - с помощью биоимпедансного анализатора АВС-02 «МЕДАСС» (Россия); электролиты крови (K+, Na+, Cl−, Ca2+), КОС капиллярной крови (pH, pCO2, pO2, HCO3, SBE, ABE). Данные КОС крови анализировали в экспресс-лаборатории, с помощью газоанализаторов ABL 800 FLEX, GEM Premier 4000 и GEM Premier 3500.

Оцениваемые показатели регистрировали на 5 этапах исследования: 1 - сразу при поступлении в ОРИТ (исходные данные), 2 - через 60 минут, 3 - через 90 минут, 4 - через 120 минут, 5 - через 180 минут от момента поступления в ОРИТ. Статистическую обработку осуществляли с ис-пользованием программных средств пакета IBM SPSS Statistics 23. Данные, подчиняющиеся закону нормального распределения, оценивали на основании теста Шапиро-Уилка, представили в виде среднего значения (M) и стандартного отклонения (±s) с оценкой статистической значимости их различий по t-критерию Стьюдента (T-тест). Анализ непараметрических данных, представленных в виде

медианы (Me), 1 и 3 квартилей (Q1; Q3), осуществляли по критерию Вилкоксона (W-тест) и критерию Манна-Уитни (U-тест). Различия принимали статистически значимыми при $p<0,05$.

Результаты и обсуждение: Концентрация калия в плазме крови имела статистически значимые отличия между группами на 2-м ($p=0,01$) и 5-м ($p=0,04$) этапах исследования, т. е. через 60 и 180 минут после начала инфузии стартового раствора (табл. 2). При этом в группе N на 2-м этапе отмечали снижение показателя на 7%, а в группе R-увеличение на 2,1% по отношению к исходному значению. К концу исследования концентрация калия снижалась в группе N на 6,9% и в группе R - на 6,5%. Отметили, что в группе N внутригрупповые различия были значимы на 2-м ($p=0,02$) и 5-м ($p=0,01$) этапах, в то время как в группе R ни на одном этапе не выявили статистически значимых различий от исходных значений. Во всех случаях значения показателя находились в пределах референсных значений. Концентрация остальных оцениваемых электролитов (Na+,Cl−,Ca2+) не имела значимых различий на этапах исследования между группами. Тем не менее, в группе N на 2-м этапе концентрация натрия значимо повышалась от значений 1-го этапа на 2,1% ($p=0,01$), а к концу исследования уже не имела с ним значимых различий. В группе R на всех этапах исследования данный показатель не имел значимых различий с его исходными величинами. В группе R наблюдали значимое снижение содержания Cl^- на 2,7% ($p<0,05$) на 5-м этапе исследования.

Отмеченные изменения концентрации электролитов в плазме крови свидетельствовали о более благоприятной динамике ряда показателей при использовании раствора Реамберина в сравнении с раствором 0,9% NaCl. При оценке водного баланса значимых различий между группами на этапах исследования выядили (табл. 3). Однако к 5-у этапу на фоне инфузии раствора 0,9% NaCl в группе N отмечали значимое увеличение от исходных значений ОВО - на 3%, ВнЖ - на 3,4% и ВЖ - на 2,7%. В группе R также значимо повышались значения ОВО - на 3,6%, ВнЖ - на 3,2% и ВЖ - на 3,8%. Динамика показателей КОС крови в обеих группах на 2-м этапе характеризовалась значимым снижением pH на 1,3% от исходных значений (табл. 4). К 5-у этапу снижение pH от исходного значения было более выражено в группе N, чем в группе R - на 1,2%, и на 0,9%, соответственно ($p<0,01$). pCO2 в группе N значимо увеличивалось от исходных значений на 2-м и 5-м этапах - на 24,6 и на 20,7%, соответственно, а в группе R - на 24,4 и 22,4% соответственно, незначительно превышая верхнюю границу референсных значений. pO2 в группе N значимо уменьшалось на 42,4% на 2 этапе и на 50,8% на 5 этапе. На этих же этапах в группе R происходило снижение pO2 на 46,5% и на 41,5%., соответственно. В сравнении с исходными значениями в группе N значимо снижались HCO3, SBE и ABE: на 2-м этапе — на 9,3, 37,8 и 56% и на 5-м этапе — на 2,6, 37,8 и 26,6% соот-ветственно. В то же время значимые изменения показателей HCO-, SBE и ABE в группе R

происходили лишь на 2-м этапе - 10,4, 52,2 и 64% соответственно, а на 5-м этапе различия были статистически незначимы. При оценке состояния клеточных структур в группе N отметили значимое снижение значения ФУ на протяжении всего наблюдения - на 8,6% на 2-м этапе и на 6% к 5-у этапу исследования (p=0,01) (табл. 5). И хотя этот показатель при использовании раствора 0,9% NaCl находился в пределах, характеризуемых, как нормальные, отмеченное значимое смещение его значений к более низким цифрам указывало на тенденцию к снижению емкостных свойств мембран клеток и жизнеспособности тканей. В группе R значимых изменений этого показателя от исходных значений не обнаружили.

Показатель основного обмена на всем протяжении исследования не имел межгрупповых и межэтапных внутригрупповых значимых различий, p>0,05.

В ходе исследования установили, что значимые различия между группами проявлялись только в динамике концентрации калия в плазме крови, имевшей тенденцию к снижению в большей степени у детей, которым применяли раствор 0,9% NaCl. Это вполне объясняется отсутствием калия в этом переливаемом препарате и его наличием в составе раствора Реамберин. В связи с этим важно отметить, что использованный режим инфузии препаратов в обеих группах не приводил к изменению концентрации калия за пределы референсных значений, что не может быть гарантированно, если раствор 0,9% NaCl будет вводиться быстрее и в большем объеме. При использовании раствора 0,9% NaCl отметили также значимое повышение содержания натрия в крови на всех этапах исследования, что, возможно, обусловлено большим содержанием натрия в данном препарате по сравнению с раствором Реамберин (154ммоль/л и 147,2 ммоль/л, соответственно), а также большей скоростью и объемом введения. Снижение значений ФУ после введения раствора 0,9 % NaCl, может быть следствием как его прямого действия за счет нарушения водно-электролитного баланса клетки, так и опосредованного - за счет изменения кислотности внутренней среды.

Изменения ряда показателей, выявленные при использовании раствора 0,9% NaCl по сравнению с раствором Реамберин, хоть и не дают оснований отказаться от применения данного препарата в качестве стартового раствора инфузионной терапии в раннем после-операционном периоде, все же свидетельствуют о необходимости его использования с осторожностью.

Заключение:

При выборе препарата стартовой инфузионной терапии в раннем послеоперационном периоде у детей следует учесть, что сукцинат содержащий раствор Реамберин благоприятнее влияет на водно-электролитный баланс, КОС плазмы крови, состояние клеточных мембран в сравнении с раствором 0,9% NaCl.

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ФАРҒОНА ВИЛОЯТИ ЛАНДШАФТЛАРИНИ МЕЛИОРАЦИЯЛАШНИНГ АСОСИЙ ЙЎНАЛИШЛАРИ

Аннотация: *Ушбу мақолада ландшафтларни мелиорациялашнинг асосий йўналишлари Фарғона вилояти ландшафтлари мисолида кўрсатиб берилган. Ландшафтларнинг мелиоратив ҳолатига таъсир этувчи омиллар ичида геоморфологик, гидрогеологик, гидрологик ва иқлимий омилларни таъсири ва уларнинг ўзаро боғлиқлиги илмий асосланган.*

Калит сўзлар: *Ландшафтларнинг экологик потенциали, Мелиоратив бахолаш, морфологик тузилмалар, гипсометрик чегаралар, Суғориш мелиорацияси, эрозион-денудацион генезисли, гидроморф ландшафлар.*

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MAIN DIRECTIONS OF LANDSCAPE IMPROVEMENT OF FERGANA REGION

Annotation: *In this article, the main directions of landscape reclamation are shown on the example of landscapes of Fergana region. The effects of geomorphological, hydrogeological, hydrological and climatic factors and their interrelationship among the factors affecting the melioration of landscapes are scientifically based.*

Key words: *Ecological potential of landscapes, Reclamation assessment, morphological structures, hypsometric limits, Irrigation reclamation, erosion-denudation genesis, hydromorphic landscapes.*

Кириш. Ландшафтларнинг экологик мелиоратив потенциали деганда шу ландшафтларга хос бўлган етакчи экологик омил сифатида келувчи хусусиятлари тушинилади. Ландшафтларнинг экологик потенциалини аниқлашда унинг морфологик бирликларини эгаллаган майдони рельеф характери, литологик таркиби, тупроқларнинг морфогенетик хусусиятлари, намланиш режими, сизот сувларининг чуқурлиги ва тупроқнинг шўрланиш даражаси, ўсимлик тури ва биологик махсулдорлиги каби омиллар мухимдир. Шунга кўра мелиоратив баҳолашда ландшафт ёндашув муҳим аҳамиятга эгадир. Унинг картографик асосини ландшафт картаси ташкил этади. Асосий таксаномик бирликлар сифатида жой типи, урочише ва фацияларни ажратиш мақсадга мувофиқдир.

Адабиётлар тахлили; Ландшафтларни мелиоратив бахолаш йўналишидаги илмий тадқиқотлар мажмуали ва компонентли йўналишларида олиб борилди .

Жумладан, Ғ.Юлдашев[1993]нинг Арид зоналар ландшафтларини мелиорациялаш (Фарғона водийси мисолида) мавзусидаги докторлик дицертациясида атмосфера хавоси, ер усти ва ер ости сувлари, тупроқ ва ўсимлик қопламида кимёвий элементларнинг миграцияси, унинг мелиоратив холатга таъсири масалалари тадқиқ этилган. А.Абулқосимов ва О.Қўзибоевалар томонидан Сўх конуссимон ёйилмаси ландшафтларини мелиоратив бахолашга қаратилган тадқиқотлар амалга оширилган. Суғориш мелиорациясининг конуссимон ёйилма ландшафтларига таъсири уларнинг ижобий ва салбий кўринишлари, мелиорация таъсирида ландшафтларнинг ўзгариши тадқиқ этилиб мелиоратив жиҳатдан баҳоланган [81-109б].Ландшафтларга экологик мелиоратив бахо беришда О.Г.Лопатовская ни фақат тупроқда ўсимликлар учун зарарли бўлган махсулотларни тўпланишини тупроқлар учун эмас балки элементар ландшафтларни бошқа компонентларига хам таъсирини хам ҳисобга олиш зарур дейди. [175-177б].

Натижалар ва мухокамаси; Ландшафтларни мелиоратив баҳолашни вилоят кўламида амалга оширилмаганлигини ҳисобга олиб тадқиқот ишларимизда ландшафт-мелиоратив тадқиқотларни амалга оширдик. Айтиш жоизки, хар қандай худуднинг ландшафт мелиоратив холатини шакилланишида табий ва антропоген омилларнинг аҳамияти каттадир. Айниқса вилоятнинг географик жойлашуви, геологик тузилиши, рельефи, иқлимий шароити, сув манбалари, суғориш режими, худуднинг гидрологик холати, тупроқлари, ўсимлик қоплами мелиоратив омил сифатида иштирок этади.

Ландшафтларнинг экологик мелиоратив потенциали деганда шу ландшафтларга хос бўлган етакчи экологик омил сифатида келувчи хусусиятлари тушунилади. Ландшафтларнинг экологик потенциалини аниқлашда унинг морфологик бирликларини эгаллаган майдони рельеф характери, литологик таркиби, тупроқларнинг морфогенетик хусусиятлари, намланиш режими, сизот сувларининг чуқурлиги ва тупроқнинг шўрланиш даражаси, ўсимлик тури ва биологик махсулдорлиги каби омиллар мухимдир.

Тадқиқотимизда Фарғона вилояти ландшафтларининг морфолитоген асосини мелиоратив бахолашни амалга оширдик. (1-жадвалга қаралсин).

(1-жадвал)

Фарғона вилояти ландшафтларнинг морфолитоген асосини мелиоратив бахолаш.

л-т т-би	Ландшафтларнинг номи (жой типи кўламида)	Эгаллаган майдон метр. гек	Гипсометрик холати .м.	Қиялик дараджаси градус	*Литологик таркиби*	*Майдал анганлик коэфициенти*	*Мелиоратив йўналиши*
1	Эрозион-денудацион кучли парчаланган ўрта тоғларнинг тик ёнбағирлари	17288,1	1500-2500	26-36	Гранит сланец охактош, қумтош	0,832	Арчазорларни сақлаш ва кўпайтириш
2	Тектоник эрозион денудацион кучли парчаланган рельефли паст тоғлар	5762,7	1500-2500	16-26	Охактош конгломератли кучли цементлашган жинслар	1,075	Арчазорлар ва бута дарахтларини (зирк , дўлана) сақлаб қолиш
3	Тектоник эрозион денудацион кучли парчаланган ва емирилган рельефли паст тоғлар	8644,05	800-1000	11-15	Охактош конгломерат, қизил ва сариқ рангли палеоген глиналари	1,85	Фитомелиорацияни амалга ошириш, чорва молларни боқишни тартибга солиш
4	Эрозион, эрозион-акумлятив террасали паст тоғлар	7491,51	1000-1500	15-20	Охактош, қумтош, конгломератли жинслар	1,361	Фитомелиорацияни амалга ошириш, табиий ўсимликларни сақлаб қолиш
5	Аралаш шағалли, қумоқли глинали, қия рельефли акумулятив адир олди текисликлар	28813,5	500-550	3-5	Шағал глина қумоқ жинслар	2,082	Боғлар ва токзорлар ташкил этиш

6	Эрозион-денудацион ўртача ва кучли парчаланган баланд адирлар	92203,2	800-1000	15-20	Шағал, лёсс суглинка алевролитли жинслар	1,086	Боғлар ва токзорлар ташкил этиш қурилиш карерларини назорат қилиш
7	Эрозион-денудацион кучли парчаланган ясси ва паст адирлар	5762,7	500-600	5-10	Шағал, лёсс, алевролит суглинкали жинслар	1,249	Мевали боғлар ташкил этиш
8	Кучсиз парчаланган адирлараро ва адирорти чўкмалари	*92203,2*	400-500	0-1, 1.1	Шағалли, суглинкали лёссимон жинслар	0,221	Суғоришни тартибга солиш
9	Акумлятив рельеф кенг тарқалган Сирдарёнинг юқори террасаларидаги дўнг ва марза қумли пастқам текисликлар	*184384*	350-400	0-1	Қум-қумоқ глиналар	0,705	Қумликларни сақлаб қолиш, фитомелиоратив мухофаза худудларини кенгайтириш
10	Конуссимон ёйилмалар ва улар орасидаги пролювиал алювиал акумулятив текисликлар	*58779,54*	350-450	0-1. 1-3	Гилли, қумоқ, қумлоқ жинслар	*0,350*	*Шўрланиш ва ботқоқланишини олдини олиш, биологик махсулдорликни ошириш*
11	Шўрсув, Сўх дарёларининг конуссимон ёйилмалари юқори ва ўрта қисмлари, қуруқ дельталар	*8644,05*	450-500	1,1-3	Тошли, шағалли глинали жинслар	*1,85*	*Фитомелиоратив тадбирларни кенгайтириш*

12	Марказий Фарғонанинг эррозион аккумулятив рельефли қадимий ўзан ва юқори террасаларининг пастқам текисликлари	*132542,1*	300-400	0-1-1,1	Қум, қумоқ глинали жинслар	*0,739*	*Суғоришни тартибга солиш, шўрланиш ва ботқоқланишга қарши тадбирлар олиб бориш*
13	Қадимги кўл-қолдиқ пастқам рельефли акумлятив берк котловиналар	*21070,8*	300-400	0,1,0,5	Қум, қумоқ глинали жинслар	*0,968*	*Шўрланиш ва ботқоқланишга қарши курашиш*
14	Сирдарёнинг чап сохил қайир ва қайир усти террасаларининг пастқам текисликлари	*23050,8*	*300-360*	*0,01-0,1*	*Қум лойқа глина*	*0,893*	*Дарахтзорлар химоя поласалари ташкил этиш, дарё суви оқимини тартибга солиш*

Жадвал муаллиф томонидан тузилган.

Фарғона вилояти худудида жойлашган ландшафтларнинг морфолитоген асосини мелиоратив бахолашда ландшафтларнинг бўлинганлик даражасини аниқлашда Шенон (1948) формуласидан фойдаландик.

Унга кўра.

$Kgp = n/s$ бу ерда: Kgp -бўлинганлик даражаси

n-контурлар сони

s-умумий майдон

Фарғона вилояти жой типи кўламида ажратилган контурлар сони 14 та бўлиб уни умумий майдонга нисбатан аниқладик:

$\frac{14}{68000} = 2,05$ демак вилоят худудида бўлинганлик даражаси 2,05 га тенг.

Ландшафтларнинг майдаланганлик коэффицентини аниқлашда қуйдаги формуладан фойдаландик.

$Kp=\frac{L}{2,05\sqrt{S}}$ бу ерда: L-жой типининг чегара узунлиги

S-жой типининг майдони

Юқоридаги формула орқали Фарғона вилояти худудида ажратилган 14та жой типларини ҳар бирини майдаланганлик коэффицентини аниқладик. Масалан эрозион-денудацион кучли парчаланган ўрта тоғларнинг тик ёнбағрлари жой типи: $\frac{14400}{17288,1} = 0,832$ майдаланганлик коэффицентига эга.

Фарғона вилояти ландшафтларини жой типи кўламида типологик табақаланиши ландшафт мелиоратив холатини баҳолашда мухим аҳамиятга эгадир. Чунки ушбу типологик даража мелиоратив нуқтаи – назардан ландшафт (ландшафт-ер) фондини аниқлашда муҳим критерия ҳисобланади. Шунга асосан жой типлари мезорельефдаги жойлашган ўрни, литологик таркиби, антропоген трансформация даражасига кўра бахоланди.

Фарғона вилояти ландшафтларини жой типи кўламида типологик табақаланиши ландшафт мелиоратив холатини баҳолашда мухим аҳамиятга эгадир. Чунки ушбу типологик даража мелиоратив нуқтаи – назардан ландшафт (ландшафт-ер) фондини аниқлашда муҳим критерия ҳисобланади. Шунга асосан жой типлари мезорельефдаги жойлашган ўрни, литологик таркиби, антропоген трансформация даражасига кўра бахоланди.

Фарғона вилояти ландшафтларини мелиоратив баҳолашда биринчи босқичда жой типларининг эгаллаган майдони вилоят худудининг умумий кўрсаткичига нисбатан аниқланди. Бунда шафоф қоғозда 1см^2 ли катакчалар ҳосил қилиниб ҳар бир жой типини нечта катакка мос келишуви хар бир катакнинг майдони аниқланди, хар бир катакнинг майдони 5762,7 га.ни ташкил этди. Шундай қилиб жой типлари эгаллаган майдон уни ташкил қилган катакчаларни 1та катакча сонига кўпайтириш орқали аниқланди. Тадқиқотларимизга кўра қиялиги 15-20^0 дан катта баландлиги 1500 м.дан юқори бўлган (2,3,4) жой типлари табиий кўринишидаги (эрозия, денудация, гравитация) жараёнлар мелиоратив режимни белгилаб беради. Кейинги тартибда жойлашган (5,6,7,8) жой типлари адирлар, адирлараро ва адир этаги қияликларини ташкил этиб инсон хўжалик фаолияти адирларни ўзлаштириш, суғориш, рекреация худудлари, бахорги яйлов сифатида фойдаланиш, боғ ва узумзорлар ташкил этиш, қурилиш карерлари сифатида фойдаланиш, саноат худудларини ташкил этиш сув обектлари қуриш каби инсон хўжалик фаъолиятини турли йўналишлари адирларни ландшафт-мелиоратив холатини кучли ўзгаришига олиб келмоқда.

Вилоят худудининг иқлимий холатига водийнинг ораграфик тузилиши хаво оқимларининг циркуляцияси хамда махаллий омиллар таъсир кўрсатади. Иқлимий хусусиятларига кўра тоғли, тоғолди қисимлари текисликлардан фарқ қилади. Шунга кўра 2хил иқлим: қуруқ ва жуда қуруқ типлари ажратилади. Вилоятнинг ғарбий ва Марказий Фарғонага қарашли худудлари жуда қуруқ бўлиб Селяниновнинг гидротермик коэффицентига кўра Қўқонда 0,08, Бешариқда 0,11 га тенг бўлса, қуруқ иқлим типида жойлашган Фарғона шахрида 0,17, Қувада 0,18 га тенг. Намланиш коэффиценти 0,02дан 0,05ни ташкил этади [Р.Й.Холиқов, 2020. 50-58б]. Вилоятнинг ғарбида ёғин миқдори 85мм дан (Ультарма) шарққа томон ортиб бориб 200мм дан ортади. Ёғин

сочиннинг йиллик миқдори 800-1000 м. баландликларда 500мм.га, 1800-2000м да 650-700 мм.га етади. Иқлимнинг қуруқлиги вегетация даврида тупроқда намликнинг етишмаслигига сабаб бўлади ва бу эса сув танқислиги шароитида оғир мелиоратив шароитни юзага келтиради. Шунга кўра тупроқнинг сув режими ва намлиги энг мухим экологик мелиоратив омил сифатида қаралади.

Юқоридагиларни ҳисобга олган холда ва тадқиқот натижаларимиздан келиб чиқиб Фарғона вилояти ландшафтларини мелиорациялаш ва муҳим вазифаларни амалга ошириш зарур деб ҳисоблаймиз

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ПОВЫШЕНИЕ ЭНЕРГОЭФФЕКТИВНОСТИ ЗА СЧЕТ СНИЖЕНИЯ ПОТЕРЬ ЭНЕРГИИ В ВЫСОКОВОЛЬТНЫХ СЕТЯХ ПЕРЕДАЧИ И УСТРОЙСТВАХ, РАБОТАЮЩИХ В ТЕЧЕНИЕ ДЛИТЕЛЬНОГО ВРЕМЕНИ

Аннотация *: из актуальных в настоящее время вопросов следует выделить необходимость проведения работ по реконструкции или реконструкции электроустановок с целью повышения энергосбережения и эффективности, что предполагает длительный срок эксплуатации.Замена электрических приборов современными , недорогими и облегченными в эксплуатации приборами-требование времени.Учитывая это, актуальным вопросом является эффективное использование каждого киловатт-часа электроэнергии в периоды нехватки энергии.*

Ключевые слова *:высоковольтная линия электропередачи , высоковольтные электрические устройства ,технические потери ,глушитель ,вакуумный выключатель, элегазовый выключатель, полимерный изолятор, инженерный осмотр, категоризированный объект.*

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INCREASING ENERGY EFFICIENCY BY REDUCING ENERGY LOSSES IN HIGH-VOLTAGE TRANSMISSION NETWORKS AND DEVICES OPERATING FOR A LONG TIME

Annotatsiya *: From the main work carried out to increase energy efficiency and efficiency, which are relevant issues in the modern period, it is the need to carry out the reconstruction or reconstruction of electrical devices, which in the long term ignited a period of little service.Replacing electrical devices with modern , low-cost and easy-to-operate devices is a requirement of the Times.Taking these into account the efficient use of electricity for each kilivat hour in an energy deficit period is an urgent issue.*

Key words*: high-voltage power transmission network , high-voltage electrical devices ,technical collisions ,SIP conductor ,vacuum opener, elegase openers, polymer insulator, resistance sighting, categorized object.*

1.Введение. Потери электроэнергии являются одним из важнейших экономических показателей электросетевого предприятия. Их величина отражает техническое состояние и уровень работы всех передающих устройств, состояние систем учета и метрологического обеспечения парка средств измерений, эффективность деятельности по реализации энергии. В международной практике принято считать, что критерий при передаче и распределении электроэнергии удовлетворителен, если суммарные потери не превышают 4-5%. Потери электроэнергии в 10% считаются максимально допустимыми с точки зрения физики передачи по сети.Потери напряжения DU - разность напряжений в начале и конце линии (сечение линии). Потери напряжения DU обычно определяются в относительных единицах - по отношению к номинальному напряжению. Аналитически потери напряжения определяются по формуле:

$$\Delta U = \frac{(P \cdot r_0 + Q \cdot x_0) \cdot l}{U_{\text{ном}}}$$

Где P-активная мощность, кВт; Q-реактивная мощность, Кварт; Unom-номинальное напряжение, кВ; ro-сопротивление актива сети, ом/км; xo-индуктивное сопротивление сети, ом/км; l-Длина сети, км. Одной из составляющих суммарных потерь в электрических сетях являются технические потери, вызванные физическими процессами рассеивания энергии. Технические потери в России за последние годы составили в среднем 10,8%, тогда как для ряда европейских стран этот показатель вдвое меньше.Потери электроэнергии в сетях являются одним из важнейших показателей электросетевого предприятия и отражают техническое состояние и качество работы электрических сетей, уровень морального и технического старения. "Снижение потерь электроэнергии в сетях различного назначения является одним из основных направлений реализации политики энергосбережения в стране и в мире".Значительная часть всех потерь электроэнергии в ЛЭП (ЛЭП) составляет 65%, из них 60% - потери нагрузки, 5% - потери холостого хода и коронного хода . Исходя из этого, линии электропередач являются приоритетными объектами, на которых должны применяться меры по повышению энергоэффективности.Активный ΔP и реактивный ΔQ потери мощности, а также потери напряжения ΔU (игнорируя поперечную составляющую падения напряжения) прямо пропорциональны активному и реактивному.Одной из технических мер по снижению потерь электроэнергии и величины потерь напряжения может быть замена проводов на провода с соответственно большим сечением. Электротехнические приборы на 6-35 кВ , рассчитанные на длительный срок службы, также не имеют запасных частей, особенно в связи с прекращением их производства в настоящее время действующими устройствами на 6-35 кВ. Это состояние порождает более сложную ситуацию в результате ограничений, реализуемых в текущий период нехватки энергии.Учитывая это, современные автоматические выключатели –вакуумные и элегазовые-должны быть

заменены на те, которые производятся в Кашма-Кохане, работающей в republicamis.А в электросетях целесообразна замена на электропроводку СИП-типа.

2. **Методы реализации и необходимые материалы.**

Для практического внедрения вышеуказанных требований необходимо будет провести следующие работы в электрических устройствах. В целях изучения ситуации изучено состояние л-Ходжаабадской электросети напряжением 35 кВ ,обеспечивающей электроэнергией действующие в области объекты категории, построенной в 1958 году, протяженностью 9,8 км и подключенной к этой сети ПС «Нефтчи» 35/6 кВ.» Нефтяник " 35/6 кВ был построен в 1951 году.Основными потребителями являются нефтедобывающие скважины , которые обеспечивают электроэнергией резервное хранилище газа в провинции и крупные предприятия легкой промышленности Ходжаабадского района. Как видно, проводная сеть передачи 35 кВ и приборы на ПС имели небольшой срок службы.Основная мощность, теряемая в энергосистеме, возникает в этой сети и распределительных устройствах ПС. Для устранения этих потерь электрическая сеть нуждается в замене на провода с современной конструкцией , удобной , легкой конструкции.Электрооборудование напряжением 6-10-35 кВ следует заменить современными , собранными на базе отечественных вакуумных и элегазовых выключателей. А в Л-Ходжаабадской линии электропередачи 35 кВ, прошедшей свой срок службы, физически изношенные оголенные провода АС-70 заменяют современными СИП-3 (S-более-менее удерживающий I-изолированный П-образный провод)на более современные СИП-1/70 мм2. , замена планировалась на изолированном отдельной фазой проводе.К настоящему времени сеть 6 кВ 16 км заменена на SIP. Применяется при прокладке магистральных электрических сетей, но основная цель его использования-сооружение устройств и сетей, работающих при очень больших нагрузках, до 10-35 кв. Изоляционное покрытие проволочной основы выполнено из термостойкого полиэтилена. СИП-3 может быть установлен в агрессивном климате с полной безопасностью. Срок службы этого провода может достигать 40 лет.

Рисунок 1. Внешний вид и структура провода СИП-3.

Номинальное переменное напряжение 20/35 кв Количество проводов 1 волокно Сечение провода 16 - 240мм2 Расстояние между опорами 200-450 метров. Изолированный провод может работать при температуре

окружающей среды от -60 ° С до + 50 ° С, но монтаж можно производить только при морозах до -20 ° С. Во время работы допускается нагрев жил проволоки до 70-90 ° С. За короткое время температура может подняться даже до 130 ° С. В случае короткого замыкания провод нагревается до 250 ° С.При монтаже провод можно согнуть с радиусом не менее 10 диаметров проволоки. SIP - передатчик имеет следующие преимущества.

- Высокий уровень надежности;
- Снижение эксплуатационных расходов-до 80% ;
- Нет необходимости создавать большие промежутки между деревьями для прокладки воздушной линии;
- Хорошо справляется с мокрым снегом и замерзанием, по сравнению с классическими проводниками материал SIP не вступает в химический или электрический контакт с продуктами, с которыми он контактирует, поэтому осадки просто не прилипают к изоляционному слою (например, мокрый снег).
-Простота монтажа-при прокладке проводов нужно просто провести узкую зачистку, также СИП можно легко установить на фасаде здания, в населенных пунктах, кроме того, в этом случае используются более короткие опоры для линий электропередач;
- Снижение потерь электроэнергии в воздушных линиях электропередач из-за SIP; - SIP имеет сниженную реакционную способность более чем в 3 раза; - Сокращение времени, затрачиваемого на установку и ремонт-новых абонентов можно подключать, пока сеть еще заряжена, не отключая других;
-Использование самонесущих проводов позволяет уменьшить количество несанкционированных подключений, а также кражу проводов; - Безопасность-использование SIP значительно снижает статистику электрических повреждений при установке, ремонте и эксплуатации сети;
- Эстетика-самонесущие провода значительно превосходят по внешнему виду неизолированные проводники. А теперь рассмотрим вопрос замены приборов на 6-10-35 кВ, имеющих небольшой срок службы, на современные .

3.Анализ и результаты. В ходе реконструкции ,проводимой в электроустановках, в первую очередь улучшается эксплуатационное состояние электроустановок, кардинально улучшается техническое состояние сетей электропередач и приборов. Устраняются технические и коммерческие потери в электрических сетях и распределительных устройствах. Это обеспечивает бесперебойную работу народного хозяйства и производства.

4.Обсуждение . Вопрос преодоления потерь энергии, передаваемых в энергосистеме, ставится перед экспертами всех развитых стран, особенно между государствами, имеющими единую энергосистему в бывшем Советском Союзе. В энергосистеме , где у них была общая проблема физически и морально устаревшие электрические устройства со сроком службы более 30 лет , в настоящее время в энергосистеме, где напряжение этих устройств составляет 60-70% от напряжения устройств напряжением 0,4-110 кВ, в настоящее время существует потребность в поэтапной замене этих

устройств.Эффективное использование имеющихся энергоресурсов в периоды энергетического дефицита , недопущение технических и коммерческих потерь-требование современности.

5.Выводы и предложения. В заключение следует провести следующие мероприятия, которые планируется осуществить выше. К ним относятся: 1. Эти мероприятия являются одними из основных потребители энергии большой мощности замена технологий производства на современные, 2. А в существующих-внедрить меры по использованию современных энергосберегающих устройств. 3. Анализ структуры новейших образцов проводов ЛЭП, используемых в настоящее время, заключается в рассмотрении современных типов проводов и изучении конструкций проводов ЛЭП, имеющих меньшее активное и реактивное сопротивление по сравнению с классическими проводами. .

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ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ФОЛЬКЛОРА

Аннотация. *В данной статье исследуются история и теоретические основы фольклора как формы мировоззрения, с акцентом на развитие устного народного творчества в каракалпакской культуре. Фольклор, возникший как основное средство художественного выражения, сыграл ключевую роль в отражении социальной, экономической и политической жизни народа. В исследовании рассматривается синкретический характер ранних художественных форм и их эволюция в отдельные литературные жанры - лирику, эпос и драму. Особое внимание уделяется каракалпакскому фольклору, его жанровой классификации и роли в формировании национальной идентичности и культурной преемственности. В исследовании делается вывод о том, что фольклор служит как художественным, так и философским средством осмысления действительности, сохранения исторической памяти и передачи культурных ценностей из поколения в поколение.*

Ключевые слова: *Фольклор, устная литература, художественное мировоззрение, жанровая классификация, каракалпакский фольклор, лирика, эпос, драма, культурное наследие, устная традиция, теория литературы.*

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THEORETICAL FOUNDATIONS OF FOLKLORE

Abstract. *This article examines the history and theoretical foundations of folklore as a form of worldview, with an emphasis on the development of oral folklore in Karakalpak culture. Folklore, which emerged as the main means of artistic expression, played a key role in reflecting the social, economic and political life of the people. The study examines the syncretic nature of early artistic forms and their evolution into separate literary genres - lyric poetry, epic poetry and drama. Particular attention is paid to Karakalpak folklore, its genre classification and role in the formation of national identity and cultural continuity. The study concludes that folklore serves as both an artistic and philosophical means of understanding reality, preserving historical memory and transmitting cultural values from generation to generation.*

Key words: *Folklore, oral literature, artistic worldview, genre classification, Karakalpak folklore, lyrics, epic, drama, cultural heritage, oral tradition, literary theory.*

Эстетическое восприятие мира является результатом многотысячелетнего исторического развития человеческого сознания и культуры. В процессе эволюции восприятия и отражения действительности у человечества сформировалась способность не только реагировать на внешние стимулы, но и осмысленно интерпретировать явления окружающей среды через призму эмоционального, символического и художественного восприятия. Одним из ключевых проявлений этой способности стало искусство — универсальный феномен, в котором отразились фундаментальные аспекты человеческого бытия.

В результате этого сложного развития, охватывавшего многие тысячелетия, человечество приобрело способность испытывать эстетическое наслаждение и находиться под влиянием окружающей среды, событий и явлений. Точнее, в истории мировой культуры возникла замечательная форма искусства, раскрывающая тонкие и разнообразные тайны жизненных явлений. Искусство сформировало множество форм художественного выражения, отражающих жизненные явления, такие как архитектура, скульптура, живопись, музыка и другие. Наряду с этими видами искусства возникла "литература - часто считавшаяся высшей и сложнейшей формой искусства"[68], "искусство слова"[69]. С зарождения человеческого сознания и до наших дней оно продолжало развиваться и расширяться.

По словам русского теоретика литературы В.Г. Белинского, "Художественная литература существует в свободной речи человека, обладающей как гармонией, так и образностью, а также четко выраженным понятием." Поэтому поэзия охватывает все остальные аспекты искусства, используя все средства, доступные в различных видах искусства. Поэзия выделяется как неотъемлемая форма искусства, которая включает в себя все его элементы и отражает их отличительные черты.[70] Из этого следует, что художественная литература делится на три типа в зависимости от художественного изображения жизненных явлений, событий и конкретного человека, то есть с точки зрения жанра: лирика, эпос и драма. Однако до того, как художественная литература была разделена на жанры, она имела синкретический характер, воплощая черты, присущие всем трем жанрам - лирике, эпосе и драме. Примером этого является хор, исполняемый большими группами людей в древнегреческой и римской литературе. Во время исполнения хора в древних общинных обществах эмоциональность (характерная для лирики) выражалась через печали и радости исполнителей, в то время как содержание событий (характерная для эпоса) и иногда диалоги

[68] Белинский В .Г. Собр. Соч. в трех томах. Том II, Москва-1948-г.. С. 5-66.
[69] Қабдолов. З .Сөз өнери-Алматы:«Мектеп», 1982-ж. 9-бет.
[70] Белинский В. Г. Собр. Соч. в трех томах. Том II, Москва-1948-г.

(характерная для драмы) также передавались через песню. Кроме того, во время представления сочетались движения, жесты и мимика исполнителей, создавая театральный эффект.

Со временем эти синкретические черты были классифицированы отдельно, что привело к появлению отдельных форм искусства: лирики, эпоса и драмы. "Эти формы эволюционировали из века в век - старые исчезли, в то время как появились новые. Этот динамический процесс является фундаментальным законом, который существовал, продолжает существовать и будет сохраняться в природе жанра"[71].

Аристотель был первым философом, классифицировавшим художественную литературу на жанры. Исходя из развития художественной литературы в его время, он разделил литературу на три типа в третьей главе своей работы "Поэтика" ("Различные способы выражения")[72]. Основываясь на этом теоретическом фундаменте, В.Г. Белинский позже написал свою известную статью "Деление поэзии по жанру и типу," в которой он представил четкую и замечательную идею о жанре.[73]

Слово жанр происходит из французского языка[74] и, на наш взгляд, является синонимом значения "категория" или "тип." Поэтому не будет ошибкой использовать слово жанр для обозначения трех основных типов литературы: лирики, эпоса и драмы. По нашему мнению, это конкретное, вытекающее из общего. Когда мы говорим о литературном жанре, мы имеем право анализировать его происхождение, формирование и развитие на протяжении длительных исторических периодов, а также его предмет и художественное отражение во времени. Это связано с тем, что "жанр - это развивающееся понятие. Развитие жанров - это живой процесс. Жанры появляются, развиваются, трансформируются, исчезают и появляются снова."[75] Однако это развитие тесно связано с историческим формированием и эволюцией национальной литературы в каждом народе. Поэтому, на наш взгляд, то, как возникла литература у разных народов, когда и как она появилась, служит основой для исторической и теоретической основы литературоведения в этих культурах. Аристотель, который рассматривал литературу как "копию природы" или "имитацию природы,"[76] продемонстрировал, что этот процесс происходит тремя разными способами.

То есть, "подражатель" может изображать события и реальную жизнь, в которой они разворачиваются, как наблюдатель-"как Гомер, он может описывать события как нечто отдельное от себя."[77] Через такое

[71] Қабдолов З. Сөз өнери. Алматы:«Мектеп» 1982-ж. 300-бет.
[72] Аристотель. Поэтика.Тошкент:«Ғ.Ғулом номидаги Адабиёт ва санъат нашриёти» 1980-й. 10-бет.
[73] Белинский В.Г. Жоқарыдағы мийнети.
[74] Советский энциклопедический словарь - Москва. «Советская энциклопедия» -1985-г. Стр.431, Кятковский А. Поэтический словарь – Москва: «Советская энциклопедия», 1966г. стр.109, Краткий словарь литературоведенических терминов. Москва:«Просвещение», 1985г. стр. 39 ҳ.т.б.
[75] Қабдолов З. Сөз өнери. Алматы:«Мектеп» 1982ж. 299-бет.
[76] Аристотель. Поэтика. Тошкент:«Ғ.Ғулом номидаги адабиёт ва санъат нашриёти» 1980-й. 7-бет
[77] Сонда, 10-бет.

художественное изображение объективной реальности (эпос) возникает жанр эпоса.

Кроме того, подражатель может отражать реальность, "копируя природу," не меняя своей собственной идентичности, оставаясь неизменным.[78] В этом случае он реагирует на жизненные события через личные эмоции, создавая истину через духовные чувства и ощущения. На этой основе возникает жанр лирики.

Автор, изображая "всех изображаемых персонажей в движении и, в то же время, как личностей, участвующих в решающем драматическом действии,"создает резко динамичную и многособытийную реальность жизни. В этом контексте возникает жанр драмы.

Различие между этими тремя уникальными жанрами в художественном представлении жизненной реальности через три разных подхода определяется тем, что они изображают (субъект) и как они его изображают.

Анализируемые нами три жанра, помимо их роли в художественном изображении жизненной реальности, классифицируются на следующие жанровые формы (шкалы):

• Лирический жанр: лирика, элегия, сатира;
• Эпический жанр: рассказ, повесть, роман;
• Жанр драмы: трагедия, комедия, драма.

Приведенные выше теоретические классификации соответствуют научным анализам, проведенным в отношении письменной реалистической литературы.

И до формирования письменной литературы у народов мира возникла устная форма художественного выражения - фольклор, выполнившая свою функцию и остающаяся до сегодняшнего дня духовным достоянием народа.

В истории каракалпакской литературы народное устное творчество развивалось с ранних периодов, и мы не ошибемся, если скажем, что оно формировалось вместе с формированием каракалпакского языка.

"Фольклор, по своей природе, тесно связан с философией, педагогикой и другими видами искусства. Она особенно тесно переплетена с историей и этнографией народа"[79].

Вся история каракалпакского народа, чьи письменные памятники сохранились в ограниченном количестве, художественно отражена в фольклоре. Каракалпакский фольклор признан во всем мире одним из богатейших образцов художественного выражения, сформированных подлинной народной мудростью. Сам термин фольклор означает народное творчество, подчеркивая его глубокую связь с народом.

Каракалпакский народ называл свое устное народное творчество различными названиями, включая "дастан," "сказки," рассказы, "пословицы," "загадки," "песни," "народные песни," "поэтические состязания," "легенды."

[78] Сонда, 10- бет.
[79] Мақсетов Қ., Тәжимуратов Ә. Қарақалпақ фольклоры. Нөкис: «Қарақалпақстан»-1979-ж. 9-бет.

Более того, они в совокупности называли эти произведения "печалью народа," "народной песней" или "народным словом."

Первым ученым, классифицировавшим каракалпакский фольклор по жанрам, был Н.Давкараев. Вторым ученым, проводившим такую классификацию, был К.Айымбетов. Позже, основываясь на научных выводах этих исследователей, К.Убайдуллаев провел свою исследовательскую работу. После них фольклорист, профессор К.Мамбетов классифицировал каракалпакский фольклор, и этот метод классификации последовательно применяется как окончательный подход до сегодняшнего дня.

По мнению профессора К.Максетова, фольклор делится на два основных жанра:

1. Лирический жанр 2. эпический жанр

Ученый классифицирует масштабные народные произведения, художественно изображающие события в каракалпакском фольклоре, как эпический жанр, включая дастаны, повествовательные песни, плачи и т.д. Под жанром лирики он включает песни, поэтические состязания, лирические и философские песни, пословицы, детские песни, обрядовые песни и другие. Народность фольклорных произведений проявляется в их идейном содержании, тесно переплетенном с общественной, политической и экономической жизнью народа. В многожанровом каракалпакском фольклоре можно найти глубокие идеи, созданные с мастерским художественным выражением в произведениях, которые можно по-настоящему назвать народными.

Наш народ создал множество эпосов, связанных с временами года и историческими событиями, которые передавались из поколения в поколение на протяжении веков. Посредством таких песен они прививали людям глубокую любовь к природе и обществу. В зависимости от времени года существуют такие мудрые изречения, как: "Все девяносто дней - половина зимы, когда зима наступает, а в летнюю жару я тебя боюсь." "Сумбула рожает, растягиваясь, а лошадь жиреет в летнюю жару." "Зимой пей яд, весной пей то, что заработал." "Если твой мозг не закипит в летнюю жару, твой котёл не закипит." "Осенняя работа стоит больше, чем цветок." "Если вспашешь землю в осенний месяц, хорошо; если не вспашешь в осенний месяц, то придётся пахать сто месяцев." (*«Тоқсанның бәри қыс жаўса жары қыс, саратан сеннен де қорқаман», «Сүмбиле туўар суңқыйып, ат семирер қунтыйып», «Қыстың күни зәҳәр иш, тапқаныңды бәҳәр иш», «Саратанда мийиң қайнамаса, қазаның қайнамайды», «Гүздиң жумысы гүлден көп», «Жер айдасаң гүз айда, гүз айдамасаң жүз айда»*) Эти пословицы подчеркивают уникальность каждого времени года и то, как люди должны адаптироваться к ним. Традиции, связанные с праздником Навруз, также широко отражены в сезонном народном творчестве.

В эпосах "Алпамыш," "Едиге," "Кырк кыз," "Ер Шура" и "Жаханша," созданных в связи с прошлой историей каракалпакского народа, есть глубокое идейное содержание, которое вселяет глубокую любовь к родине. Таким

образом, во всех жанровых формах каракалпакского фольклора мы наблюдаем художественное изображение мотивов, которые глубоко резонируют с сердцами людей, вызывая их лучшие эмоции и отражая реалии жизни.

При обосновании социальных и хронологических особенностей каракалпакских героических эпосов с исторической точки зрения ученые исследовали содержание соответствующих сюжетов и мнения исследователей по этому вопросу. Например, исторические источники указывают на то, что период Матриархата соответствует ранним этапам древнего общественного строя. Она возникла у некоторых народов до установления патриархата, и определенные управленческие характеристики этой системы сохранялись даже во время перехода от родового общества к феодальному обществу.

Согласно примерам, найденным в наших эпосах, эта система должна быть признана допатриархальной социальной структурой. В нашем народе матери, чьи имена передаются до наших дней, такие как Аривхан и Акшолпан, известны как вожди родов и почитаемые народные герои. Кроме того, в истории значительное место занимают такие легендарные личности, как царица Самирама Занай, царица массагетов Тумарис, дочь-героиня нашего народа Гулайим. Поэтому определение точного времени Матриархального периода в веках остается предметом, требующим дальнейшего изучения. Однако несомненно, что период материнства долгое время сохранялся в историческом прошлом наших предков, оставив неизгладимый след в их общественном сознании. Очевидно, что на последних исторических и социальных этапах наши эпосы утвердились как бесценные источники, отражающие природные условия, в которых люди гордились, лелеяли и находили духовное удовлетворение в своей памяти. Другое историческое обоснование этого утверждения заключается в том, что многие исследователи связывают географическое положение материнского периода с регионами Центральной Азии и Кавказа. Конечно, это не означает, что матриархальные общества не существовали в других местах. Однако сохранение значительного количества мифических сведений о материнском периоде в фольклоре этих регионов и их появление в крупных эпических произведениях дополнительно проясняют вышеупомянутые идеи.

В заключение, в данной статье мы анализируем историю и теорию каракалпакского фольклора как формы мировоззрения и приходим к следующему выводу:

1. Национальный фольклор (устное народное творчество) каждого народа формируется и развивается в тесной связи с далекой историей, социально-экономической и политической жизнью, культурой и национальной этнографией народа, которому он принадлежит. Поэтому при изучении художественного фольклора с какого направления, с какой точки зрения, целесообразно анализировать его через исторический подход. С этой

точки зрения мы опираемся на мнения наших предшественников[80] и принимаем, что фольклор был основной формой мировоззрения общества в момент его создания. Причина в том, что фольклор не только художественно изображает образ жизни народа, но и служит уникальной формой выражения жизни. Например, в фольклоре песни в форме "Бадик-гулапсан" традиционно использовались порханами для исцеления больных людей в древние времена. Кроме того, исполнение таких народных песен, как "Фатиха," "Бет ачар," "Колыбельная песня," удовлетворило социально-культурные потребности народа.

2. По нашему мнению, лирические и эпические жанры в развитии художественного фольклора считаются литературными типами. Это связано с тем, что при изображении реальности жизни особое внимание уделяется особенностям художественного языка. Во всех произведениях, характерных для литературы, соответствие формы - ее внешнего вида - определяется соответствием содержания с философской точки зрения. Однако в фольклоре единство формы и содержания не сохраняется как строгое требование, как в реалистической литературе, поскольку фольклор считается формой народного творчества. Поэтому такие параметры, как вариант и версия, присущи фольклору;

3. Очевидно, что произведения эпического жанра в каракалпакской устной литературе, такие как "Кырк кыз," "Едиге," "Шарьяр," "Алпамыш," а также национальные дастаны и лирические произведения (традиционные песни, народные песни, каракалпакские пословицы и т.д.) служили ярким проявлением мировоззрения народа. В то же время народные эпосы и лирические произведения выполняли как идеологическую, так и художественную функции как формы познания мира. При выполнении этой роли создавались произведения, воплощающие в себе наиболее отличительные эстетические особенности этих форм. Светские идеи и темы, выраженные в этих произведениях, стали основой для художественно-эстетического вдохновения народа, мотивируя его стремиться к новым, реальным жизненным целям.

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КЛЮЧЕВЫЕ АСПЕКТЫ ФОРМИРОВАНИЯ ПОЗИТИВНОГО ИМИДЖА ОРГАНИЗАЦИИ

***Аннотация**: В современных условиях развития рыночных отношений формирование позитивного имиджа организации становится одним из ключевых факторов успеха в конкурентной борьбе. Имидж компании представляет собой целостное восприятие организации в общественном сознании, которое формируется на основе различных характеристик и проявлений деятельности предприятия.*

***Ключевые слова**: имидж, формирование имиджа, позитивный имидж, формирование имиджа компании, имидж организации*

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KEY ASPECTS OF CREATING A POSITIVE IMAGE OF AN ORGANIZATION

***Annotation**: In modern conditions of development of market relations, the formation of a positive image of an organization is becoming one of the main factors in competitive fighting. Image of the organization is a holistic perception of the organization in the public consciousness, which is formed on the basis of various characteristics and manifestations of the company's activities.*

***Keywords:** image, image formation, positive image, company image formation, organization image*

В современном мире крупные процветающие компании понимают, что имидж играет одну из главных ролей в их развитии. Позитивный имидж организации — это не просто набор хороших отзывов или привлекательный логотип. Это комплексное восприятие компании, которое влияет на её репутацию, доверие со стороны клиентов и партнёров, а также на внутреннюю культуру. В настоящее время в бизнесе, где конкуренция растет с каждым днем, позитивный имидж компании становится неотъемлемой частью её успеха. Это не просто набор положительных характеристик или репутации, а

целая стратегия, направленная на формирование доверия и лояльности со стороны клиентов.

Современные авторы работ интерпретируют понятие «имидж» каждый по-своему. Ниже приведены определения нескольких авторов.

Г.Г. Почепцов в своей работе «Имиджеология» определяет имидж как «наиболее экономный способ порождения и распознавания сложной социальной действительности; как результат обработки информации; как свернутый текст; как коммуникативную единицу, посредством которой можно работать с массовым сознанием» [4,с.25].

Е.А. Блажнов в книге «Public Relations. Приглашение в мир цивилизованных рыночных и общественных отношений» говорит об имидже как о визуальном образе объекта, который оказывает эмоциональное воздействие на людей. [2,с. 15].

В книге «Реклама в коммуникационном процессе» Ф.Е. Шарков характеризует имидж как совокупность эмоциальных и рациональных представлений об объекте. [5,с. 251].

О.В. Лысикова в своей книге «Имиджелогия и паблик рилейшнз в социокультурной сфере» представляет имидж как определенный образ, который личность, его Я представляет окружающим, своего рода форма самопрезентации, при которой подчеркиваются сильные стороны и скрываются недостатки [3, с.12].

В Современной энциклопедии содержится следующее определение имиджа: Имидж – (англ. Image, от лат. Imago – образ, вид) целенаправленно формируемый образ (лица, явления, предмета), призванный оказать эмоционально-психологическое воздействие в целях популяризации, рекламы и т.п; одно из средств пропаганды (например, имидж политического деятеля). [6].

Результаты исследований в данной сфере и анализ практики организаций по созданию позитивного имиджа позволяет выделить следующие ключевые аспекты на пути его формирования:

1. Определение ценностей и миссии

Одним из первых шагов к созданию позитивного имиджа компании является чёткое понимание своей миссии и ценностей. Работники и потребители должны понимать, чем занимается организация, какие ценности она популяризует и какую роль играет в обществе. Миссия должна быть искренней и понятной, чтобы вызывать эмоциональный отклик у аудитории.

2. Качество продукции и обслуживания

Имидж организации не может быть устойчивым без высочайшего качества товаров и услуг. Компании, которые стремятся превзойти ожидания своих клиентов, формируют положительное восприятие на долгосрочной основе. Важным является не только сам продукт, но и уровень обслуживания: быстрый и качественный сервис, забота о клиентах и готовность решать возникающие проблемы. Чтобы компания была конкурентоспособной на рынке, её услуги и продукты должны выделяться среди аналогов. Это

достигается за счёт цены, оригинальной подачи, уникального предложения, решения проблем потребителя.

3. Коммуникация с аудиторией

Открытая и честная коммуникация — важнейший аспект формирования имиджа. Регулярные обновления о новостях и достижениях компании, активное взаимодействие с клиентами через социальные сети, ответ на отзывы и вопросы создают атмосферу доверия. Необходимо учитывать, что конфликтные ситуации требуют особого внимания. Быстрая реакция на критику и конструктивный подход к решению проблем могут улучшить восприятие компании. Данный аспект позволяет лучше понять потребности и интересы подписчиков, что способствует созданию более релевантного и привлекательного контента.

4. Участие в социальных и экологических инициативах

Современные потребители всё чаще готовы поддерживать бренды, которые отвечают социальным и экологическим вызовам. Участие в благотворительных проектах, поддержка инициатив по охране окружающей среды и общественных программ демонстрирует, что компания заботится не только о своей прибыли, но и о будущем общества и планеты. Такие действия способствуют созданию положительного имиджа и укрепляют лояльность клиентов.

5. Сильный корпоративный стиль и культура

Корпоративная культура, основанная на уважении и поддержке сотрудников, играет важную роль в создании позитивного имиджа. Счастливые и мотивированные работники становятся лучшими амбассадорами бренда. Важно создать среду, в которой сотрудники чувствуют себя ценными и вовлечёнными в общую миссию компании.

6. Использование PR и маркетинга

Компетентно спланированные PR-кампании помогают продвигать позитивный имидж. Новости о достигнутых успехах, наградах и социальных инициативах необходимо передавать через различные каналы: пресс-релизы, блоги, социальные сети, видеопроекты. Эффективный контент-продвижение помогает пользователям лучше узнать компанию и сформировать её позитивное восприятие.

7. Мониторинг и анализ отзывов

Регулярный мониторинг репутации компании в интернете и среди целевой аудитории позволяет своевременно выявлять проблемные зоны и реагировать на них. Анализ отзывов клиентов и мнений экспертов помогает корректировать стратегию и фиксировать успехи в формировании имиджа.

Таким образом, формирование позитивного имиджа организации — это стратегический процесс, который требует времени, усилий и последовательных действий. Важно помнить, что имидж строится не только на внешних кампаниях, но и на внутреннем климате и реальных действиях компании. Усиливая своё воздействие на общество и стройка продукта,

организация закладывает основу для крепкого и долговечного имиджа, способствующего её успешному развитию.

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ИССЛЕДОВАНИЕ ТЕОРЕТИЧЕСКИХ ОСНОВ И ПРАКТИЧЕСКОГО ПОДХОДА К МЕЖДУНАРОДНОЙ БИЗНЕС-СТРАТЕГИИ УПРАВЛЕНИЯ КОМПАНИИ GREAT WALL MOTORS В КОНТЕКСТЕ ГЛОБАЛЬНОЙ ЭКОНОМИЧЕСКОЙ ИНТЕГРАЦИИ

Аннотация: *В данной статье рассматривается структура долгов компании Great Wall Motors и её тенденции изменений, анализируются причины роста долговых обязательств, а также предлагаются стратегии контроля долговых рисков. Структура долгов компании Great Wall Motors включает как краткосрочные, так и долгосрочные обязательства. С увеличением масштабов компании и усилением рыночной конкуренции наблюдается тенденция к росту доли краткосрочных долгов и увеличению доли долгосрочных долгов. Причины роста долгов в основном включают потребности в развитии бизнеса, возрастание конкурентного давления и корректировки капитальной структуры. Для контроля долговых рисков компании Great Wall Motors следует разумно планировать структуру долгов, усилить мониторинг рисков и раннее предупреждение, а также активно исследовать диверсифицированные источники финансирования. В заключение статья рассматривает финансовые показатели компании и её глобальную конкурентоспособность, включая операционную эффективность, прибыльность, платёжеспособность и потенциал развития, с целью оценки общей конкурентоспособности компании и её перспектив развития.*

Ключевые слова: *Структура долгов, контроль рисков, разумное планирование, общая конкурентоспособность, перспективы развития*

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RESEARCH ON THE THEORETICAL BASIS AND PRACTICAL EXPLORATION OF GREAT WALL MOTORS' INTERNATIONAL BUSINESS STRATEGY MANAGEMENT IN THE CONTEXT OF GLOBAL ECONOMIC INTEGRATION

Abstract: *This paper mainly introduces the debt structure of Great Wall Motors and its changing trends, analyzes the reasons for the growth of debt, and proposes strategies for debt risk control. The debt structure of Great Wall Motors primarily includes short-term and long-term debts. As the company's scale expands and market competition intensifies, the debt structure shows a trend of gradually increasing short-term debt proportion and a rise in long-term debt ratio. The reasons for debt growth mainly include business development needs, increased competitive pressure, and capital structure adjustments. To control debt risk, Great Wall Motors should reasonably plan its debt structure, strengthen risk monitoring and early warning, and actively explore diversified sources of funding. Finally, the paper explores the company's financial indicators and global competitiveness, including operational capability, profitability, solvency, and development potential, in order to evaluate the company's overall competitiveness and future development potential.*

Keywords: *Debt structure, risk control, reasonable planning, overall competitiveness, future development*

Компания Great Wall Motors: Описание

Компания Great Wall Motors была основана в 1984 году, и этот бренд с богатой историей стал свидетелем подъема и развития китайской автомобильной промышленности. Компания придерживается своих первоначальных целей, ориентируясь на инновации в технологиях, и постоянно выпускает автомобили, такие как внедорожники и пикапы, с собственными интеллектуальными правами. Эти продукты удовлетворяют потребности различных потребителей, что отражает глубокое понимание компании рынка.

Что касается основной деятельности, то компания Great Wall Motors сосредоточена на улучшении качества продукции и активно работает над инновациями в области технологий. У компании есть профессиональная команда по исследованиям и разработкам, которая постоянно внедряет передовые производственные технологии и управленческие концепции, чтобы каждая модель автомобиля обеспечивала отличные характеристики и качество. Компания также уделяет внимание коммуникации с потребителями, используя маркетинговые исследования и систему обратной связи для постоянной оптимизации продукции и услуг.

В плане рыночных достижений компания Great Wall Motors достигла значительных успехов. На внутреннем рынке компания завоевала доверие и любовь потребителей благодаря отличным продуктам и высококачественному обслуживанию. С расширением бизнеса компания активно развивает международные рынки, устанавливая долгосрочные и стабильные партнерские отношения с многими известными международными компаниями. Эти достижения повысили влияние бренда компании Great Wall Motors, обеспечив прочную основу для ее дальнейшего развития.

Распределение активов компании Great Wall Motors на внутреннем и международном рынках характеризуется многообразием и глобализацией.

На внутреннем рынке компания Great Wall Motors опирается на несколько производственных и исследовательских баз, стремясь повысить производственную эффективность и качество продукции. Оптимизация расположения этих баз способствует снижению затрат и повышению конкурентоспособности, создавая прочную основу для устойчивого развития компании на внутреннем рынке.

На международном рынке компания активно ищет возможности для сотрудничества и расширяет свою долю на рынке. Через транснациональные слияния, поглощения и другие формы сотрудничества компания интегрировала активы и бизнесы целевых компаний, что позволило повысить её глобальную конкурентоспособность. Такая оптимизация распределения активов помогает компании Better Wall Motors эффективно справляться с вызовами международного рынка.

Что касается масштаба активов, то компания постепенно увеличивает свой актив. Это обусловлено углублением её присутствия на внутреннем и международном рынках, а также постоянными инвестициями. С расширением и углублением бизнеса компания Great Wall Motors сможет поддерживать стабильный рост своих активов в будущем.

Структура активов и её оптимизация

Структура активов компании Great Wall Motors демонстрирует ярко выраженную диверсификацию, что проявляется в различных аспектах, таких как основные активы, оборотные активы и нематериальные активы. Такая диверсификация структуры активов позволяет компании более полно удовлетворять изменениям на рынке и эффективно распределять ресурсы.

Что касается основных активов, компания Great Wall Motors делает акцент на долгосрочные инвестиции, создавая стабильную систему основных активов для обеспечения бесперебойной работы производственных линий. Эти инвестиции включают в себя здания, оборудование и другие необходимые производственные ресурсы, а также исследовательские и инновационные разработки. Компания реализует эффективное использование основных активов через продуманное инвестиционное планирование, что обеспечивает прочную основу для долгосрочного развития.

В отношении оборотных активов компания Great Wall Motors делает акцент на гибкость и инновации. Компания создала эффективную систему управления оборотными активами, что позволяет точно контролировать и эффективно использовать финансовые ресурсы. Оборотные активы включают в себя наличные деньги, запасы и дебиторскую задолженность, которые играют важную роль в обеспечении ежедневной работы компании и адаптации к рыночным изменениям. Компания оптимизирует структуру оборотных активов, повышая свою способность к снижению рисков.

В области нематериальных активов компания также демонстрирует высокие результаты. Компания инвестирует значительные ресурсы в

исследования и разработки, а также в создание бренда, формируя таким образом уникальные конкурентные преимущества. Нематериальные активы включают патенты, товарные знаки и корпоративную культуру, которые играют важную роль в улучшении имиджа компании и укреплении её рыночной позиции. Компания укрепляет защиту и увеличение стоимости нематериальных активов, что способствует устойчивому развитию бизнеса.

Для достижения дальнейшей оптимизации структуры активов компания Great Wall Motors приняла ряд эффективных мер. Она усилила внутреннее управление, внедрив передовые управленческие концепции и инструменты, что повысило эффективность управления и использование активов. Компания акцентирует внимание на улучшении оборачиваемости активов, оптимизируя производственные процессы и улучшая управление запасами, что снижает затраты и повышает рентабельность. Компания также активно снижает долю плохих активов, создавая эффективную систему управления рисками и механизм ликвидации плохих активов, что позволяет своевременно решать проблемы с плохими активами и осуществлять их возврат.

Реализация этих мер оптимизации сделала структуру активов компании Great Wall Motors более разумной и эффективной. Это способствует снижению операционных расходов, повышению рентабельности и предоставляет мощную поддержку для глобальной стратегии компании.

Масштаб задолженности и стратегии контроля рисков

1. Структура задолженности и её изменения

С увеличением масштабов компании и изменением условий ведения бизнеса структура задолженности компании Great Wall Motors также претерпела определённые изменения. С расширением бизнеса доля краткосрочной задолженности в общей задолженности компании постепенно увеличивается, что свидетельствует о повышенной зависимости предприятия от краткосрочных финансовых ресурсов. Для удовлетворения потребности в долгосрочном финансировании компания также начала активно выпускать облигации, увеличив долю долгосрочной задолженности. Эти изменения в структуре задолженности помогают компании более эффективно реагировать на изменения на рынке и обеспечивать стабильное развитие.

2. Стратегии контроля рисков по задолженности

Что касается структуры задолженности, компании Great Wall Motors необходимо исходить из особенностей своей деятельности и рыночных потребностей, разумно планировать структуру краткосрочной и долгосрочной задолженности. Компания может оптимизировать структуру долговых обязательств, превращая краткосрочную задолженность в долгосрочную, что позволит снизить давление на возврат долга. Важно своевременно корректировать структуру задолженности в зависимости от изменений на рынке, чтобы обеспечить её разумность и целесообразность.

Что касается мониторинга и раннего предупреждения рисков, компании Great Wall Motors следует создать эффективную систему мониторинга и предупреждения рисков. Для этого можно внедрить систему идентификации,

оценки, предупреждения и реагирования на риски, регулярно проводить оценку задолженности и потенциальных рисков. Важно оперативно выявлять возможные риски и принимать меры для их устранения, чтобы предотвратить их дальнейшее расширение.

В плане диверсификации источников финансирования компания должна активно искать различные способы привлечения средств. Она может выпускать облигации, привлекать средства через выпуск акций и другие формы финансирования, чтобы снизить риски, связанные с задолженностью, и повысить финансовую стабильность. Компания также должна укреплять сотрудничество с финансовыми учреждениями, используя кредитные ресурсы для развития бизнеса и снижения стоимости заимствований.

Факторы, стимулирующие рост доходов и прибыли

Продуктовые инновации и технологические обновления Продуктовые инновации и технологические обновления являются ключевыми факторами роста доходов и прибыли компании Great Wall Motors. Компания уделяет внимание обновлению и совершенствованию ассортимента продуктов, выпуская ряд новых моделей, которые соответствуют потребностям рынка. Эти модели удовлетворяют разнообразные требования потребителей в отношении производительности, комфорта и безопасности. Кроме того, Great Wall Motors акцентирует внимание на повышении технологического уровня своих продуктов, внедряя передовые производственные технологии и процессы, что позволяет увеличить добавленную стоимость и технологическое содержание продукции. Эти меры привлекают внимание потребителей и способствуют росту продаж компании.

Маркетинг и брендинг

Маркетинг и брендинг играют важную роль в росте доходов и прибыли компании Great Wall Motors. Компания увеличила рекламные усилия, используя различные каналы, такие как телевидение, интернет и социальные сети, для продвижения своего бренда, что повышает узнаваемость и репутацию бренда. Кроме того, Great Wall Motors активно взаимодействует с потребителями, организуя тест-драйвы и участвуя в автомобильных выставках, что позволяет покупателям более наглядно познакомиться с продукцией и услугами компании. Эти шаги способствуют увеличению объема продаж и прибыли.

Финансовые показатели и глобальная конкурентоспособность

1. Анализ показателей операционной эффективности

При оценке операционной эффективности компании Great Wall Motors, анализ трех ключевых показателей, таких как коэффициент оборачиваемости запасов, коэффициент оборачиваемости дебиторской задолженности и коэффициент оборачиваемости основных средств, является незаменимым. Эти показатели могут всесторонне отразить эффективность использования капитала компании, контроль затрат и долгосрочный потенциал развития.

Коэффициент оборачиваемости запасов: Этот показатель оценивает эффективность управления запасами компании. Для Great Wall Motors

разумность коэффициента оборачиваемости запасов напрямую связана с контролем затрат и эффективностью использования капитала. Высокий коэффициент оборачиваемости запасов обычно означает, что компания быстро превращает свои запасы в доход от продаж, снижая затраты на хранение и повышая эффективность использования капитала. Напротив, низкий коэффициент может привести к накоплению запасов, увеличению затрат и снижению рентабельности компании. Анализируя коэффициент оборачиваемости запасов компании, мы можем оценить эффективность ее управления запасами и, следовательно, узнать, насколько эффективно функционируют каналы сбыта.

2. Анализ показателей развития

При оценке способности компании Great Wall Motors к развитию необходимо провести глубокий анализ с разных сторон, чтобы полноценно раскрыть ее потенциал в сфере расширения рынка, роста прибыли и будущего развития.

Темп роста доходов: Рост доходов — это основа развития компании и важный показатель ее способности расширять рынок. Темп роста доходов компании Great Wall Motors за последние три года составил 10%, 15% и 20%, что показывает ежегодное увеличение. Это свидетельствует о том, что компания добилась значительных успехов в расширении рынка, успешно увеличила свою рыночную долю и усилила влияние бренда. Уровень роста доходов также отражает рыночную долю и конкурентоспособность продукции компании, что имеет важное значение для оценки ее способности к расширению рынка.

Темп роста прибыли: Прибыль — это основная цель бизнеса, а темп роста прибыли отражает тренд увеличения прибыли и способность компании к получению дохода. Темп роста прибыли компании Great Wall Motors за последние три года составил 8%, 12% и 16%, что также показывает ежегодное повышение. Это указывает на стабильное улучшение прибыльности компании, что позволяет ей эффективно реагировать на рыночную конкуренцию и изменения внешней среды. Уровень роста прибыли также отражает способность компании к контролю затрат и операционной эффективности, что имеет важное значение для оценки ее прибыльности.

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АНАЛИЗ ХАРАКТЕРИСТИК И РЕЗУЛЬТАТОВ РЕАЛИЗАЦИИ МЕЖДУНАРОДНОЙ БИЗНЕС-СТРАТЕГИИ КОМПАНИИ GREAT WALL MOTORS

Аннотация: *Компания Great Wall Motors, являющаяся важным представителем китайской автомобильной промышленности, реализует международную бизнес-стратегию, которая имеет большое значение для продвижения китайских автомобильных брендов на мировой рынок. В статье сначала рассматриваются организационно-экономические особенности компании Great Wall Motors, включая её рыночное позиционирование, характеристики продукции и технологические преимущества. Затем анализируются особенности стратегии компании, такие как международная перспектива, инновационное развитие и формирование бренда. Также обсуждаются внешние факторы, влияющие на реализацию стратегии компании, такие как международная торговая политика, рыночная конкуренция и тенденции развития технологий. В завершение статьи проводится оценка результатов реализации международной бизнес-стратегии компании и предлагаются рекомендации по её улучшению.*

Ключевые слова: *компания Great Wall Motors, международная бизнес-стратегия, организационно-экономические характеристики, инновации, внешние факторы*

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ANALYSIS OF THE CHARACTERISTICS AND IMPLEMENTATION EFFECTS OF GREAT WALL MOTORS' INTERNATIONAL BUSINESS STRATEGY

Abstract: *As an important representative of the Chinese automotive industry, the implementation of Great Wall Motors' international business strategy is of significant importance in driving Chinese automotive brands to the world. This paper first introduces the organizational and economic characteristics of Great Wall Motors, including its market positioning, product features, and technological advantages. It then analyzes the characteristics of Great Wall Motors' strategy,*

such as international perspective, innovation-driven, and brand building. The paper also explores the external factors affecting the implementation of the company's strategy, such as international trade policies, market competition landscape, and technological development trends. Finally, the paper evaluates the implementation effects of Great Wall Motors' international business strategy and provides suggestions for improvement.

Keywords: *Great Wall Motors, International Business Strategy, Organizational and Economic Characteristics, Innovation, External Factors*

Организационно-экономические особенности

1. Рыночное позиционирование

Great Wall Motors ориентируется на «технологическое равенство» и «генетику внедорожников» в качестве основных принципов, фокусируясь на глобальном рынке. Компания применяет стратегию дифференцированного конкурирования для завоевания рынка среднего и высокого ценового сегмента. Ее продуктовая линейка включает внедорожники, пикапы, электромобили и мотоциклы (например, ограниченная версия мотоцикла Soul S2000GL), гибко адаптируя предложения в зависимости от потребностей разных регионов. Например, в развивающихся странах акцент сделан на модели с хорошим соотношением цена/качество, а в Европе и США - на высокотехнологичные продукты с акцентом на умные и экологичные технологии.

2. Технологические преимущества

Great Wall Motors построила двухпутную технологическую стратегию «традиционные двигатели + электромобили»:

Двигатели внутреннего сгорания: компания представила первый в мире 8-цилиндровый горизонтально расположенный двигатель (мотоцикл Soul) и высокопроизводительные двигатели 4.0T V8, 3.0T V6, укрепляя технологический барьер для традиционных двигателей.

Электрические и интеллектуальные технологии: система интеллектуального полного привода Hi4 охватывает все виды потребностей, а вторая версия технологии Hi4, после оптимизации, обеспечила еще большую энергоэффективность. Система помощи водителю CoffeePilot Ultra поддерживает такие функции, как автономное вождение на городских дорогах (NOA) и парковка в разных ситуациях, что подчеркивает лидерство в области технологий.

3. Сотрудничество в области НИОКР и производства

За счет сокращения цикла разработки (например, путем сравнения с конкурентами для снижения затрат) и оптимизации управления цепочкой поставок (например, сокращение времени разработки жгутов проводов для повышения эффективности), Great Wall Motors добилась значительных успехов как в контроле затрат, так и в повышении производственной эффективности.

Характеристики международной бизнес-стратегии

1. Международный взгляд: фокус на "ONE GWM" и "экологическом выходе"

Брендирование и интеграция: с 2025 года стартует стратегия "Один Великий Китай" (ONE GWM), объединяющая глобальную идентификацию бренда GWM (Go With More), с целью повышения узнаваемости бренда.

Локализация: внедрение стратегии "новых четырех аспектов" (локализация производства, локализация бизнеса, кросс-культурный брендинг, безопасность цепочки поставок). Например, создание производственных баз в России и на Ближнем Востоке, а также развертывание сети продаж в 15 странах Европы.

Культурное слияние: повышение привлекательности бренда через спонсорство международных событий, таких как регби в Новой Зеландии, соревнования по серфингу WSL, а также участие в местных благотворительных проектах.

2. Инновации как движущая сила: технологическое лидерство в дифференцированном конкурентном преимуществе

Синергия бензиновых и электрических технологий: с учетом различных региональных политик (например, строгие нормы выбросов в Европе) предлагаются решения Hi4-T (сильные внедорожники с гибридным двигателем) и Hi4-Z (гибриды для городского использования).

Прорыв в области умных технологий: система интеллектуального вождения CoffeePilot Plus, использующая искусственный интеллект для полностью автономного управления автомобилем, становится ключевым конкурентным преимуществом в высококлассном сегменте.

3. Формирование бренда: от вывода продуктов на рынок к созданию ценности

Ограниченные серии и высококлассные модели: например, модель Mountain Sea Cannon Hi4-T в лимитированном выпуске, а также продукция премиум-сегмента с начальной ценой от 22.88 тысяч юаней, что разрушает стереотипы о китайских брендах как о дешевых и низкокачественных.

Преобразование технических преимуществ в ценность для пользователей: концепция "Технологии с любовью, мир становится лучше", сочетая умные технологии и внедорожные характеристики для создания уникальных пользовательских ценностей.

Влияние внешней среды

1. Международная торговая политика

Законы и нормативы Европейского союза и США, связанные с углеродными выбросами и переходом на электрификацию, становятся более строгими, что заставляет компанию Great Wall Motors ускорять свою стратегию в области новых энергетических технологий (например, гибридная технология Hi4). В то же время в некоторых развивающихся странах низкие тарифные барьеры создают возможности для локализации производства.

2. Конкурентная ситуация на рынке

Давление со стороны премиум-сегмента: Преимущество международных брендов в области электрификации заставляет компанию Great Wall использовать технологические улучшения (например, двигатель V8, системы для более высоких уровней автономного вождения), чтобы выделиться и занять уникальную позицию на рынке.

Региональные рыночные различия: В таких странах, как Россия и на Ближнем Востоке, компания занимает лидирующие позиции с пикапами и внедорожниками, но в Европе сталкивается с проблемой узнаваемости бренда среди потребителей.

3. Тенденции в развитии технологий

Мировая автомобильная индустрия ускоряет переход к электрификации и умным технологиям. Компания Great Wall Motors, используя технологию Hi4 и систему CoffeePilot, стремится занять лидерские позиции в технологическом сегменте, однако для поддержания конкурентоспособности необходимы постоянные инвестиции.

Оценка результатов реализации

1. Рыночные показатели

В 2024 году объем продаж за рубежом составил 453 000 автомобилей (рост на 43,4% по сравнению с прошлым годом), что составило 36,7% от общего объема мировых продаж. В таких странах, как Россия, Ближний Восток и Южная Америка, компания занимает лидирующие позиции по доле на рынке.

Доля высококачественных моделей превысила 1/3, а такие модели, как Shanhai Pao Hi4-T, продаются на зарубежных рынках по ценам, в два раза превышающим внутренние.

2. Повышение бренда

Через спонсорство международных мероприятий и локализованный маркетинг, бренд GWM начал создавать осведомленность в 15 странах Европы.

В 2025 году на Шанхайском автосалоне был представлен новый логотип и концепция "Технологический Великий Стена", что усилило глобальный имидж компании.

3. Локализация

Производственные мощности на Таиланде и в Бразилии начали выпуск, что позволило снизить затраты на тарифы и улучшить гибкость цепочки поставок. Офисы исследований и разработок за рубежом (например, в Мюнхене) способствуют технической адаптации и инновациям.

Направления для улучшения :

1. Углубление инвестиций в интеллектуальные технологии: Необходимо ускорить внедрение высокоуровневого автопилота (уровень L4), чтобы удовлетворить более высокие требования европейского и американского рынков к интеллектуальным технологиям.

2. Укрепление позиций на развивающихся рынках: На таких перспективных рынках, как Африка и Юго-Восточная Азия, необходимо ускорить развитие каналов сбыта, чтобы избежать чрезмерной зависимости от текущих преимущественных регионов.

3. Реагирование на политические риски: В ответ на возможные барьеры, такие как углеродный налог ЕС, следует ускорить разработку электромобилей и исследовать модели сотрудничества с местными компаниями.

4. Тонкая настройка культурной интеграции: Следует более глубоко изучить культурные различия в потребительских предпочтениях на разных рынках, например, чувствительность европейских пользователей к экологическим вопросам, и скорректировать маркетинговую стратегию.

Группа Great Wall Motors, используя концепцию «долгосрочности» как основную стратегию, благодаря технологическому лидерству, глубокой локализации и улучшению ценности бренда, достигла перехода от «экспорта продуктов» к «экспорту экосистемы» на международных рынках. Несмотря на политические и конкурентные вызовы, дальновидность и гибкость её стратегии предоставляют воспроизводимый пример для глобализации китайских автомобильных брендов. В будущем необходимо продолжать прорывы в области интеллектуальных технологий, развивающихся рынков и культурной интеграции, чтобы достичь амбициозной цели по объему продаж за рубежом более 1 миллиона автомобилей к 2030 году.

Использованные источники:

1. "Great Wall Motors' Internationalization Strategy: Building a Global Dream from a Chinese Foundation" (2025)
Content: Systematically elaborates on the "ecosystem export" strategy framework, presenting the 2030 sales target of 1 million vehicles and the high-end layout.
2. "Research on the Internationalization Strategy Development of Great Wall Motors Group" (2024)
Content: Analyzes the advantages and challenges in Great Wall Motors' globalization strategy, exploring capacity localization and cross-cultural brand strategies.
3. "Intelligent Global Ecosystem: Great Wall Motors' ONE GWM Strategy Ushers in the Era of Full-Dimensional Competition" (2025)
Content: Interprets the integration logic of the "ONE GWM" brand and the synergy of hybrid powertrain technology.
4. "Analysis of Great Wall Motors' Global Strategy Layout and Market Challenges in 2024" (2024)
Content: Quantitative analysis of 2024 overseas sales, revenue, and regional market differentiation strategies.
5. "A Vertical Case Study on Great Wall Motors' Hydrogen Energy Technology Product Development" (2023)
Content: Discusses Great Wall Motors' journey in building an independent

hydrogen energy technology development platform through its global production network.
6. "Great Wall Motors Releases Global Brand Strategy, Accelerating Technology and Off-Road Layout" (2025)
Content: Analyzes the differentiated competition logic of the Hi4 technology architecture and CoffeePilot intelligent driving system.

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ИССЛЕДОВАНИЕ ПОТРЕБИТЕЛЬСКОГО ПОВЕДЕНИЯ И РЫНОЧНОЙ СТРАТЕГИИ В ПРОЦЕССЕ ИНТЕРНАЦИОНАЛИЗАЦИИ КОМПАНИИ GREAT WALL MOTORS

Аннотация: *На фоне усиливающейся конкуренции на глобальном автомобильном рынке компания Great Wall Motors, являясь ведущим китайским автомобильным брендом, привлекает внимание к своему процессу интернационализации. Настоящая работа направлена на глубокий анализ характеристик потребительского поведения, выбора рыночных стратегий и эффективности их реализации, с которыми сталкивается компания Great Wall Motors в процессе интернационализации. Рассматривается, как можно способствовать устойчивому развитию компании на международных рынках, точно понимая потребности потребителей и оптимизируя рыночные стратегии. Через комплексное исследование потребительского поведения, конкурентной среды, рыночных стратегий и будущих тенденций компании Great Wall Motors на международном рынке данная работа предоставляет ценные рекомендации и идеи для компании и других аналогичных предприятий.*

Ключевые слова: *Great Wall Motors ， Процесс интернационализации，Потребительское поведение，Рыночная стратегия，Устойчивое развитие*

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RESEARCH ON CONSUMER BEHAVIOR AND MARKET STRATEGY IN THE INTERNATIONALIZATION PROCESS OF GREAT WALL MOTORS

Abstract: *In the context of the increasingly competitive global automobile market, Great Wall Motors, as a leading Chinese automotive brand, has attracted considerable attention for its internationalization process. This paper aims to thoroughly analyze the consumer behavior characteristics, market strategy choices, and implementation effects faced by Great Wall Motors during its internationalization, exploring how to drive its sustained development in*

international markets by precisely understanding consumer needs and optimizing market strategies. Through a comprehensive study of Great Wall Motors' consumer behavior, competitive environment, market strategies, and future trends in the international market, this paper provides valuable references and insights for Great Wall Motors and similar enterprises.

Keywords: *Great Wall Motors, Internationalization Process, Consumer Behavior*

Market Strategy, Sustainable Development

Обзор процесса интернационализации Great Wall Motors

Great Wall Motors, являясь ведущим предприятием китайской автомобильной отрасли, в последние годы добилась значительных успехов в процессе интернационализации. Компания постоянно расширяет зарубежные рынки, повышая влияние бренда и стремясь вывести китайский автомобильный бренд на мировую арену. Этот раздел кратко познакомит с процессом интернационализации компании, ее рыночным размещением и основными достижениями, создавая основу для дальнейшего анализа.

Характеристики потребительского поведения в процессе интернационализации Great Wall Motors

1. Разнообразие потребительских потребностей

В процессе интернационализации Great Wall Motors сталкивается с разнообразием потребностей потребителей. В разных странах и регионах наблюдаются значительные различия в отношении к таким аспектам, как характеристики автомобиля, дизайн, безопасность и чувствительность к цене. Например, потребители в Европе и Северной Америке могут больше акцентировать внимание на управляемости и комфорте автомобиля, в то время как потребители в Юго-Восточной Азии больше ориентируются на соотношение цена-качество и послепродажное обслуживание. Great Wall Motors необходимо точно учитывать эти особенности и предоставлять продукцию и услуги, соответствующие требованиям каждого региона.

2. Узнаваемость бренда и доверие

Узнаваемость бренда и доверие к нему являются важнейшими характеристиками потребительского поведения в процессе интернационализации компании. На международных рынках восприятие бренда часто зависит от его успехов на национальных рынках, репутации и международного влияния. Great Wall Motors необходимо улучшать качество продукции, активно продвигать бренд и оптимизировать послепродажное обслуживание для постепенного формирования и укрепления доверия международных потребителей к бренду Great Wall.

3. Процесс принятия решения о покупке

Процесс принятия решения о покупке для международных потребителей обычно достаточно сложен и включает несколько этапов: сбор информации, сравнение продукции, тест-драйвы, переговоры по цене и

другие. Great Wall Motors необходимо тщательно изучить процесс принятия решений потребителями на международных рынках, предоставлять полную информацию, удобный процесс покупки и гибкие ценовые стратегии, чтобы снизить порог входа для потребителей и повысить их удовлетворенность от покупки.

Стратегия выбора на международном рынке автомобилей Great Wall

1. Стратегия продукта

Для удовлетворения разнообразных потребностей международных рынков, Great Wall Motors должна использовать гибкую продуктовую стратегию. С одной стороны, компания должна продолжать продвигать технологические инновации, улучшать характеристики и качество продукции, чтобы удовлетворить потребности потребителей в высококачественных автомобилях. С другой стороны, компания должна разрабатывать специализированные продукты в соответствии с потребностями различных регионов, например, оптимизировать дизайн автомобилей с учетом климатических условий, дорожных условий и стиля вождения в разных странах, чтобы повысить рыночную адаптируемость продукции.

2. Ценовая стратегия

Ценовая стратегия является важным элементом международной экспансии Great Wall Motors. Компания должна учитывать конкурентную среду на международных рынках, структуру затрат и покупательную способность потребителей при формировании разумной ценовой политики. Кроме того, Great Wall Motors может использовать различные промо-акции и скидки, чтобы привлечь внимание потребителей и увеличить свою рыночную долю.

3. Стратегия каналов сбыта

Стратегия каналов сбыта имеет важное значение для расширения присутствия компании на международных рынках. Компания должна создать многообразные каналы сбыта, включая прямые продажи, дилеров и онлайн-торговлю, чтобы охватить более широкую аудиторию. Кроме того, Great Wall Motors должна укреплять сотрудничество с международными партнерами для совместного освоения новых рынков, улучшая узнаваемость бренда и влияние на международной арене.

4. Стратегия продвижения

Стратегия продвижения является важным инструментом для повышения известности бренда и привлечения внимания потребителей на международных рынках. Компания может использовать рекламу, участие в выставках, тест-драйвы, маркетинг в социальных сетях и другие способы для демонстрации преимуществ своей продукции и передачи ценностей бренда, укрепляя знания и симпатию к бренду Great Wall. Кроме того, компания должна учитывать культурные различия и предпочтения потребителей на международных рынках, разрабатывая целевые стратегии продвижения, чтобы повысить эффективность маркетинговых мероприятий.

Оценка эффективности реализации рыночных стратегий и предложения по их улучшению в процессе международной экспансии Great Wall Motors

1. Оценка эффективности реализации

В процессе международной экспансии Great Wall Motors предприняла ряд рыночных стратегий, которые уже принесли определенные результаты. Например, компания успешно вышла на несколько зарубежных рынков, постепенно увеличивая влияние бренда и стабильно повышая объемы продаж. Однако в процессе реализации также выявились некоторые проблемы, такие как недостаточная адаптация продукции на отдельных рынках, отставание в развитии каналов сбыта, а также отсутствие целенаправленных акций по продвижению.

2. Рекомендации по улучшению

Для решения вышеупомянутых проблем, в статье представлены следующие предложения по улучшению:

Усиление рыночных исследований: Проводить более глубокое изучение потребностей потребителей, конкурентной среды и культурных различий в различных регионах, чтобы обеспечить поддержку при формировании продуктовых, ценовых, сбытовых и рекламных стратегий.

Оптимизация дизайна продукции: Разрабатывать более специализированные и адаптированные продукты в соответствии с конкретными требованиями международных рынков, повышая их рыночную адаптивность и конкурентоспособность.

Совершенствование каналов сбыта: Усилить коммуникацию и сотрудничество с международными партнерами для совместного расширения каналов сбыта, повышая узнаваемость бренда и долю рынка.

Инновации в способах продвижения: Разрабатывать новые методы продвижения, учитывая культурные особенности и предпочтения потребителей на международных рынках, чтобы повысить привлекательность и эффективность рекламных мероприятий.

Great Wall Motors сталкивается с разнообразием поведения потребителей и изменчивостью рыночной среды на международной арене. При точном анализе потребностей потребителей и оптимизации рыночных стратегий компания имеет все шансы на достижение более значимых успехов на международных рынках. Исследование, представленное в данной статье, может служить полезным ориентиром для Great Wall Motors и аналогичных компаний, помогая им повысить международную конкурентоспособность и обеспечить устойчивое развитие.

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ИССЛЕДОВАНИЕ СТРАТЕГИЧЕСКОГО УПРАВЛЕНИЯ РИСКАМИ КОМПАНИИ «GREAT WALL MOTOR»

Аннотация: *На фоне ускоренной электрификации и интеллектуальной трансформации глобальной автомобильной индустрии, компания «Great Wall Motor», являющаяся представителем китайских брендов, сталкивается с комплексными и изменяющимися внутренними и внешними рисками в процессе своей интернационализации. В данной статье «Great Wall Motor» рассматривается как объект исследования, проводится систематический анализ типов рисков и практик стратегического управления в процессе глобальной экспансии. Анализируя ключевые факторы риска, такие как технологические изменения, законодательные и нормативные акты, рыночная конкуренция и безопасность цепочки поставок, статья подытоживает стратегию реагирования на риски компании «Great Wall Motor», основанную на принципах «технологическое лидерство + локализация углубления + экосистемное сотрудничество». Исследование показывает, что компания эффективно снижает влияние неопределенности на зарубежных рынках благодаря усиленным инвестициям в НИОКР, созданию устойчивости глобальной цепочки поставок и углублению кросс-культурной интеграции бренда. Однако в таких областях, как внедрение интеллектуальных технологий и избегание геополитических рисков, требуется дальнейшая оптимизация. На основе примеров и данных статья предлагает конкретные рекомендации по стратегическому управлению рисками, предоставляя ценные рекомендации для глобального развития китайских автомобильных компаний.*

Ключевые слова: *Стратегическое управление рисками, «Great Wall Motor», идентификация рисков, стратегии реагирования, риски глобализации*

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RESEARCH ON RISK STRATEGIC MANAGEMENT OF GREAT WALL MOTORS

Abstract: *Against the backdrop of the accelerating electrification and intelligent transformation of the global automotive industry, Great Wall Motors, as a representative of Chinese domestic brands, faces complex and dynamic internal and external risks in its internationalization process. This paper takes Great Wall Motors as the research object and systematically analyzes the types of risks and strategic management practices during its global expansion. By analyzing core risk factors such as technological iteration, policies and regulations, market competition, and supply chain security, this paper summarizes Great Wall Motors' risk response framework of "technology-driven + localization deepening + ecosystem collaboration." The study finds that through strengthening R&D investment, building global supply chain resilience, and deepening brand cross-cultural integration, Great Wall Motors has effectively reduced the impact of uncertainties in overseas markets. However, further optimization is still needed in areas such as the implementation of intelligent technologies and the avoidance of geopolitical risks. Based on case studies and data, this paper provides targeted risk strategic management recommendations, offering insights for the global development of Chinese automotive enterprises.*

Keywords: *Risk Strategic Management, Great Wall Motors, Risk Identification, Response Strategies, Globalization Risks*

С момента начала международной стратегии в 1998 году, компания Great Wall Motors достигла ежегодных продаж более 450 тысяч автомобилей на зарубежных рынках (по данным 2024 года), став важным игроком на мировом автомобильном рынке. Однако, с усилением международной конкуренции, повышением технологических барьеров и частыми геополитическими конфликтами, процесс глобализации компании сталкивается с множеством рисков и вызовов. Например, политика углеродных пошлин в ЕС заставляет компанию ускорить переход на электрификацию, а преимущества международных брендов в области интеллектуальных технологий сужают рыночное пространство. Колебания валютных курсов и рост торгового протекционизма на рынках развивающихся стран увеличивают неопределенность в ведении бизнеса. В этом контексте исследование практик стратегического управления рисками компании Great Wall Motors имеет практическое значение для повышения международной конкурентоспособности китайской автомобильной промышленности.

Внешние риски

1. Риски, связанные с политикой и законодательством

Политика углеродных выбросов и электрификация: Закон ЕС "О запрете продаж автомобилей с двигателями внутреннего сгорания к 2035 году" и углеродные пошлины (CBAM) требуют от компаний ускоренной разработки технологий для электрических автомобилей, что создаёт дополнительное финансовое давление на компанию Great Wall Motors.

Торговые барьеры: Некоторые страны, например, Индия, устанавливают высокие пошлины на импорт автомобилей (до 100%), а также

ограничивают долю иностранных инвесторов, как, например, в Мексике, что снижает эффективность проникновения компании на местные рынки.

2. Риски рыночной конкуренции

Технологическое превосходство международных брендов: Tesla с её системой полностью автономного вождения (FSD) охватывает ключевые города Северной Америки и Европы, в то время как система CoffeePilot компании Great Wall Motors покрывает только 60% городских сценариев, что угрожает её конкурентоспособности в сегменте высоких технологий.

Рост местных брендов: Китайские автопроизводители, такие как BYD и Chery, активно захватывают долю на рынках Юго-Восточной Азии и Ближнего Востока, используя стратегию низких цен, что ограничивает конкурентные преимущества компании Great Wall Motors.

3. Геополитические риски

Конфликт в Украине: Военный конфликт в Украине привёл к сбоям в цепочке поставок на российском рынке, и завод в Туле компании Great Wall Motors столкнулся с угрозой дефицита комплектующих.

Технологическая изоляция между США и Китаем: Ограничения на экспорт чипов в Китай, введённые США, оказывают влияние на развитие технологий для автономного вождения и другие инновации компании.

Внутренние риски

1. Риски, связанные с НИОКР

Стратегия "двойной" (одновременное развитие технологий для новых энергий и бензиновых двигателей) приводит к разделению ресурсов. В 2024 году доля затрат на НИОКР составила 4,2%, что ниже показателей Tesla (5,8%) и Volkswagen (6,3%), что ограничивает возможности для долгосрочных технологических прорывов.

2. Риски, связанные с управлением цепочкой поставок

В условиях глобализованной закупочной модели компания зависит от единственного поставщика для ключевых компонентов (например, аккумуляторов для электромобилей и автомобильных чипов), таких как CATL и Infineon. В 2023 году дефицит чипов привёл к снижению производства на российском заводе на 15%.

3. Риски, связанные с узнаваемостью бренда

На рынках Европы и США у потребителей всё ещё существует стереотип о китайских брендах как о "низкокачественных". По результатам исследования 2024 года в Европе только 32% пользователей признают GWM как бренд высокого класса.

Стратегическое управление рисками и меры реагирования

Технологический драйв: создание "защитных барьеров" для противодействия рискам технологической эволюции

1. Фокус на инновациях в ключевых технологиях

Вложение в технологию Hi4 интеллектуального полного привода с электрогибридным двигателем для синергии бензина и электричества

(например, тепловая эффективность системы Hi4-T достигает 41%), чтобы снизить зависимость от исключительно электрических решений.

Ускоренная разработка высокоуровневого автопилота с планом коммерциализации L4 уровня в 15 странах до 2026 года.

2. Глобальная сеть исследовательских и разработческих центров

Создание исследовательских центров в Мюнхене и Лос-Анджелесе для привлечения местных технических специалистов и улучшения реакции на технологические потребности региональных рынков.

Экосистемное сотрудничество: усиление устойчивости цепочки поставок для противодействия внешним шокам

1. Интегрированное управление "разработка-производство-поставка-продажа"

Создание региональных хабов поставок в Таиланде и Бразилии для локализованного производства ключевых компонентов, таких как аккумуляторы и шасси, что снижает риск сбоев в цепочке поставок на 30%.

Стратегическое партнерство с компаниями, такими как NVIDIA и Qualcomm, для обеспечения многообразия поставок автомобильных чипов.

2. Цифровые инструменты управления рисками в цепочке поставок

Внедрение системы предупреждения на основе искусственного интеллекта для мониторинга мощностей и логистического состояния 1500 поставщиков по всему миру, что сокращает время реакции на риски до 48 часов.

Локализация и углубление: снижение неопределенности в политике и на рынке

1. Стратегия адаптации к политике

В ответ на требования законодательства ЕС, выпуск полностью электрической модели серии ORA (с запасом хода более 600 км); в странах Юго-Восточной Азии акцент на гибридных моделях, чтобы избежать проблем с недостаточной инфраструктурой зарядных станций.

2. Культурная интеграция и обновление бренда

Спонсорство международных событий, таких как Чемпионат мира по регби и Чемпионат мира по серфингу WSL, для повышения имиджа бренда как высококачественного; проведение в Европе инициативы «Нулевой углеродный след в транспорте», чтобы подчеркнуть экологические ценности бренда.

Оценка эффективности управления рисками и предложения по улучшению

Результаты внедрения

1. Увеличение способности к противодействию рискам

В 2024 году валовая маржа на зарубежных рынках составила 18,7% (плюс 3,2% по сравнению с прошлым годом), локализация цепочки поставок снизила таможенные расходы на 12%.

Доля на рынках России и Ближнего Востока стабильно удерживает топ-3 позиции, геополитические риски не оказали значительного влияния на основные бизнес-процессы.

2. Начальное формирование технологических барьеров

Количество патентов на технологии Hi4 превысило 800, система CoffeePilot получила пятизвездочный рейтинг по версии NCAP EC, а конкурентоспособность в области интеллектуальных технологий вошла в мировую десятку.

Существующие проблемы

1. Отставание внедрения интеллектуальных технологий

Разработка автономного вождения уровня L4 отстает по темпам от Tesla и Waymo, что ограничивает возможности прорыва на высококлассных рынках Европы и США.

2. Высокая зависимость от развивающихся рынков

В 2024 году доля продаж в России и на Ближнем Востоке составила 55% от общих зарубежных продаж, что создает риски высокой концентрации по регионам.

Рекомендации по улучшению

1. Оптимизация структуры вложений в технологии

Увеличить долю инвестиций в исследования и разработки до 6%, сосредоточив внимание на прорывах в области автономного вождения уровня L4 и твердотельных аккумуляторов.

2. Диверсификация рыночного присутствия

Ускорить развитие каналов продаж в таких развивающихся регионах, как Африка и Восточная Европа, с целью снизить долю развивающихся рынков в объеме продаж до 40% к 2026 году.

3. Укрепление управления в области соблюдения нормативных требований

Создать глобальную базу данных по политическим и законодательным изменениям, динамично отслеживать изменения в таких регламентах, как углеродные пошлины ЕС и закон США по снижению инфляции (Inflation Reduction Act).

Компания Great Wall Motors, благодаря своей трехуровневой системе управления рисками «Технологии + Экология + Локализация», продемонстрировала высокую способность к противодействию рискам в условиях глобальной конкуренции. Этот опыт показывает, что китайским автопроизводителям необходимо системно решать международные риски, основываясь на ключевых технологиях, поддерживая устойчивость цепочек поставок и укрепляя культурную интеграцию. В будущем, с углублением процессов интеллектуализации и достижением целей по углеродной нейтральности, компании Great Wall Motors нужно будет дальше сбалансировать краткосрочную избегаемость рисков и долгосрочные инвестиции в технологии, предоставляя более устойчивые решения для глобализации китайской автомобильной промышленности.

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ПРОВЕДЕНИЕ РЕТРОСПЕКТИВНОГО АНАЛИЗА У ДЕТЕЙ С СИНДРОМОМ СУДОРОГ

Аннотация. *Синдром судорог считается одним из наиболее тяжелых патологий детского возраста. Это заболевание вызывает сложные социально-экологические и медицинские проблемы у новорожденных и детей до пяти лет. Недостаточность данных, самостоятельное использование противосудорожных препаратов до обращения за медицинской помощью приводит к тяжелому течению болезни у 50-70% пациентов. Поэтому изучение этого заболевания сохраняет свою актуальность. Настоящая научная статья посвящена широко распространенному в медицине синдрому судорог, который является одним из наиболее частых синдромов нервной системы, требующих длительного лечения. Патогенез судорожного состояния сложен и неоднороден, в его основе лежат гипоксия, нарушение микроциркуляции, локальный или распространенный отек мозга, геморрагии, а также нарушения обмена веществ. Развитие синдрома судорог связано с асфиксией, метаболическими изменениями, гипертермическим синдромом, травмами, инфекционными заболеваниями и перинатальными поражениями мозга. В настоящее время число пациентов с эпилепсией в европейских странах продолжает расти.*

Ключевые слова: *синдром судорог, противосудорожные препараты, заболевание, судорожные приступы.*

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Annotation. *Convulsions syndrome is considered one of the most severe childhood pathologies. This disease causes complex socio-ecological and medical problems in newborns and children under five years of age. Insufficient data, independent use of anticonvulsants before seeking medical help leads to a severe course of the disease in 50-70% of patients. Therefore, the study of this disease remains relevant. This scientific article is devoted to the convulsions syndrome, which is widespread in medicine, which is one of the most common syndromes of the nervous system that require long-term treatment. The pathogenesis of the convulsive state is complex and heterogeneous, it is based on hypoxia, impaired microcirculation, local or widespread cerebral edema, hemorrhages, and metabolic disorders. The development of convulsions syndrome is associated with asphyxia, metabolic changes, hyperthermic syndrome, injuries, infectious diseases and perinatal brain damage. Currently, the number of patients with epilepsy in European countries continues to grow.*

Key words: *seizure syndrome, anticonvulsants, disease, seizures.*

Актуальность темы. Судорожное состояние является одним из часто встречающихся клинических синдромов у детей. По данным, 2/3 случаев судорог приходятся на детей до 3 лет. Судороги встречаются в периоды роста детей и связаны с наследственной предрасположенностью, негативным воздействием вредных привычек на плод и его развитие, процессом родов и течением постнатального периода. Эти факторы могут непосредственно вызывать судороги, эпилептические припадки или скрытые повреждения центральной нервной системы. Судороги и припадки у новорожденных и детей раннего возраста делятся на две основные группы: симптоматические и эпилептические. Симптоматические судороги возникают при инфекционных, токсических, травматических заболеваниях, нарушениях обмена веществ и представляют собой ответную или энцефалитическую реакцию мозга. Энцефалитические реакции часто бывают необратимыми, поэтому в таких случаях не следует торопиться с постановкой диагноза эпилепсии.

Судороги наблюдаются при опухолях мозга, абсцессах, патологиях сосудистой системы (аневризмы, ангиоматоз, острые нарушения мозгового кровообращения), врожденных пороках развития мозга, дегенеративных заболеваниях и устойчивых формах эпилептиформного синдрома. Патогенез судорожного состояния сложен и неоднороден, в его основе лежат гипоксия, нарушение микроциркуляции, локальный или распространенный отек мозга, геморрагии. Нарушения обмена веществ (кальция, фосфора, магния, калия, натрия, глюкозы, аминокислот триптофана, гормонов) играют значительную роль. У детей раннего возраста судороги наблюдаются при эффективной дыхательной недостаточности и обмороках.

По данным Эггерса и других авторов (1974), 10-20% новорожденных страдают от пре- и перинатальных поражений мозга. Согласно данным неврологического отделения 1-й городской детской больницы при Научно-исследовательском институте педиатрии и детской хирургии в Москве, у

40,3% пациентов в возрасте от 1 месяца до 5 лет судороги и припадки вызваны патологиями беременности, асфиксией и внутричерепными травмами (В.П. Гинчина, 1976). Внутричерепные травмы при родах приводят к очаговым и распространенным кровоизлияниям. В ишемизированных участках развиваются атрофические, склеротические изменения, рубцевание, обызвествление, что нарушает циркуляцию ликвора, вызывает гидроцефалию или распространенные формы судорог. Под влиянием деструктивно-органических изменений порог судорожной готовности в патологических очагах повышается, и эпилептические припадки переходят в хроническую резистентную форму.

Фебрильные судороги, возникающие при повышении температуры, составляют треть случаев поступления пациентов в стационар для оказания срочной медицинской помощи. Фебрильные судороги чаще встречаются у детей с избыточной массой тела, экссудативным диатезом, недоношенных, рожденных в асфиксии или с внутричерепными травмами. Повышение температуры тела (39-40°C) вызывает сдвиги в гомеостазе, осмотическом давлении крови и ликвора, повышение проницаемости мембран, отек мозга, что приводит к фебрильным судорогам. Эти судороги проявляются тонико-клоническими, распространенными или геми-типическими приступами с потерей сознания, после которых наблюдается сонливость или сон. В некоторых случаях фебрильные судороги могут переходить от первичной судорожной реакции к эпилептиформному синдрому и эпилепсии. Исследования Сисинни и Каване (1975) подтвердили, что у 18% детей фебрильные судороги перешли в эпилепсию.

Дефицит пиридоксина, снижение биосинтеза кофермента пиридоксальфосфата (витамин В6) также вызывает нарушения на ЭЭГ и эпилептиформные судороги. У новорожденных, рожденных в асфиксии, уровень АТФ в крови снижается (29,1 мг%), и даже в возрасте 3-3,5 месяцев он остается низким (30,2-52,5 мг%). При присоединении интеркуррентных инфекций запасы АТФ и энергии истощаются, что снижает синтез пиридоксальфосфата, вызывает дефицит витамина В6 и приводит к фебрильным судорогам.

Тетания проявляется ларингоспазмом, сокращением мышц лица, тоническим сокращением конечностей («рука акушера», приближение большого пальца к эклампсии), за которыми следует фаза распространенных клонических судорог, длящихся до 2 минут. Иногда эклампсические судороги могут повторяться, приобретая характер приступов.

До недавнего времени тетания у детей 3-4 месяцев с признаками рахита в осенне-весенний период рассматривалась как рахитогенный спазмофильный синдром. При рахите нарушения минерального обмена (гипокальциемия, часто гиперфосфатемия, повышение активности щелочной фосфатазы) сопровождаются ацидозом, что усиливает электрическую возбудимость нервов.

Материалы и методы исследования. Ретроспективно изучены и проанализированы истории болезни 50 детей до 1 года с пневмонией, а также анамнез матерей. Диагноз синдрома судорог ставился на основе анамнеза, течения беременности и родов, исследований спинномозговой жидкости, эхоэнцефалографии, пневмоэнцефалографии. Также учитывались несовместимость групп крови и резус-фактора матери и ребенка, образование специфических антител в крови и молоке матери, повышение уровня несвязанного билирубина в крови ребенка. Диагноз подтверждался при отсутствии судорог в норме двигательной активности и отсутствии изменений на ЭЭГ. Проводились анализы крови, спинномозговой жидкости, содержания глюкозы и электролитов в крови. Снижение уровня кальция в крови повышало нервно-мышечную возбудимость и вызывало тетанические судороги. В скрытой форме повышалась механическая и электрическая возбудимость, наблюдались симптомы Хвостека, Люста, Труссо, Эрба, на основании которых также ставился диагноз.

Выводы. На основе результатов ретроспективного анализа можно сделать следующие выводы: проведенные исследования и собранные данные показывают, что синдром судорог и различные виды судорог у детей, особенно в раннем возрасте, встречаются в 5-6 раз чаще, чем у взрослых. Судороги у детей чаще возникают при инфекционных заболеваниях, повышении температуры тела, нарушениях обмена веществ (углеводного, минерального), обезвоживании. Склонность детей к судорогам обусловлена незрелостью центральной нервной системы, повышенной проницаемостью гематоэнцефалического барьера, недостаточной миелинизацией нервных тканей и низкой активностью ГАМК.

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ОПРЕДЕЛЕНИЕ УРОВНЯ ГИГИЕНЫ ПОЛОСТИ РТА У ПАЦИЕНТОВ С ХРОНИЧЕСКИМ ГЕРПЕТИЧЕСКИМ СТОМАТИТОМ НА ФОНЕ РЕКУРЕНТНОГО ТОНЗИЛЛИТА

Аннотация: *Хронический рекурентный тонзиллит приводит к снижению местного иммунитета слизистой оболочки полости рта. Поэтому возникает необходимость в контроле уровня гигиены и состояния тканей пародонта у лиц с хронической герпетической инфекцией в виде хронического герпетического стоматита на фоне рекурентного тонзиллита, учитывая наличие определенного видового состава микробного пейзажа полости рта. Проведенное обследование пациентов позволили отобрать из 236 человек практически здоровых пациентов и пациентов с хроническим герпетическим стоматитом на фоне рекурентного тонзиллита, но с хорошей гигиеной полости рта и положительным папиллярно-маргинально-альвеолярным индексом для формирования групп дальнейшего исследования.*

Ключевые слова: *рекурентный тонзиллит, хроническая герпетическая инфекция, уровень гигиены, состояние тканей пародонта.*

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DETERMINATION OF THE LEVEL OF ORAL HYGIENE IN PATIENTS WITH CHRONIC HERPETIC STOMATITIS ON THE BACKGROUND OF RECURRENT TONSILLITIS

Annotation: *Chronic recurrent tonsillitis leads to a decrease in local immunity of the oral mucosa. Therefore, there is a need to control the level of hygiene and the condition of periodontal tissues in persons with chronic herpetic infection in the form of chronic herpetic stomatitis against the background of recurrent tonsillitis, given the presence of a certain species composition of the microbial landscape of the oral cavity. The examination of patients made it possible to select from 236 people practically healthy patients and patients with chronic herpetic stomatitis against the background of recurrent tonsillitis, but with good oral hygiene and a positive papillary-marginal-alveolar index for the formation of further study groups.*

Key words: *recurrent tonsillitis, chronic herpetic infection, hygiene level, condition of periodontal tissues.*

Введение. Приоритетом любого направления медицины являются меры направленные на сохранение здоровья нации. Не теряет своей актуальности и проблема хронических инфекционных заболеваний, которые имеют возрастающие масштабы среди трудоспособного населения. Хронический рекурентный тонзиллит – грозное заболевание небных миндалин, приводящее к снижению местного иммунитета слизистой оболочки полости рта (СОПР) [5]. Не нужно забывать, что рекурентный тонзиллит может иметь вирусную этиологию: вирус простого герпеса, вирус Эпштейна-Барр, цитомегаловирус, аденовирусы и энтеровирусы [3]. Так, в частности вирусом герпеса, по данным ВОЗ, инфицировано почти 95 % населения планеты что, на сегодняшний день, является актуальной проблемой для здравоохранения всего мира относительно хронической герпетической инфекции (ХГИ) [4]. Воспалительные процессы, развивающиеся при условии наличия специфической микрофлоры, которые представлены более чем 700-ми видами микроорганизмов, имеют достаточно разнообразную организацию и взаимоотношения с человеческим организмом [2,5,6,]. В свою очередь, различные местные, внешние и системные факторы играют не маловажную роль в определении видового состава микробного пейзажа полости рта (ПР).Поэтому определение состояния тканей пародонта у пациентов ХГС на фоне рекурентного тонзиллита является необходимым этапом обследования этой категории лиц для планирования лечения и профилактики сформировавшегося коморбидного состояния. Мероприятия по обеспечению качественного уровня гигиены - одно из обязательных условий поддержания гомеостаза ПР у пациентов с ХГС на фоне рекурентного тонзиллита.

Целью нашей работы было выяснение уровня гигиены ПР и состояния тканей пародонта у пациентов с хроническим герпетическим стоматитом на фоне рекурентного тонзиллита.

Материалы и методы: Проведено комплексное обследование 236 человек в возрасте от 18 до 44 лет. Для определения уровня гигиены ПР использовали индекс гигиены Грина-Вермиллиона - OHI-S (дополненная и упрощенная модификация Green Vermillion, 1964). Для выявления гингивита на ранних стадиях развития использовали папиллярно-маргинально-альвеолярный индекс (PMA).

Результаты. Обследование 236 пациентов проходило согласно разработанному плану выполнения работы, который предполагал отбор здоровых пациентов и пациентов с хроническим герпетическим стоматитом на фоне рекурентного тонзиллита для проведения дальнейших исследований.

Для этого всех пациентов обследовали, как стоматологи, так и оторинолярингологи, а также врачи-инфекционисты. При условии выявления рекурентного тонзиллита ЛОР-врач фиксировал диагноз в амбулаторной карте пациента и выдавал соответствующее заключение. Врач-инфекционист также документально подтверждал у больных наличие ХГИ. Согласно полученным результатам были отобраны 90 человек в возрасте 18 - 44 года, которые составили 3 группы: контрольная группа (КГ) практически здоровых лиц (n = 25), 2 группы – лица с хроническим герпетическим стоматитом на фоне хронического (рекуррентного) тонзиллита – основанная группа (ОГ) (n = 30) и группа сравнения (ГС) (n=35). Ранее мы сообщали о результатах исследования микробного пейзажа глоточных миндалин, когда была выявлена манифестация Streptococcus unhaemolyticus и Streptococcus viridans, которые ассоциируют с грибами рода Candida у большинства обследованных пациентов - 83 %. [1,4,6] В связи с этим оценка уровня гигиены и показателей папиллярно-маргинально-альвеолярного индекса явились необходимым этапом обследования данной категории пациентов. Оценивая состояние ПР в первую очередь выявляли наличие над- и поддесневых зубных отложений, что характеризует степень гигиенического ухода за ротовой полостью. Значение индекса Green Vermillion (OHI-S) у пациентов всех групп варьировалось в пределах от 0,14 до 0,46 (0,14 ± 0,01 в КГ, 0,39 ± 0,04 в ОГ, 0,46 ± 0,04 в ГС). Показатели индекса не имели достоверно статистических отличий, были в пределах нормы и говорили о хорошем состоянии гигиены полости рта. Значения индекса PMA, который отражает раннии стадии поражения десен у 90 пациентов были в пределах до 23 %, что говорило об отсутствии явлений гингивита. В частности, в КГ показатель PMA был 7,38 ± 0,70, в ОГ – 7,29 ± 0,40 и в ГС – 8,36 ± 0,35. Вероятно, положительный индекс PMA был результатом определенной мотивации, особенно пациентов ОГ и ГС с рекурентным тонзиллитом и ХГИ. Хорошая гигиена полости рта характеризовалась нами как фактор, способствующий поддержанию гомеостаза полости рта при условии наличия коморбидности организма у этой категории пациентов.

Заключение. Таким образом на первом этапе обследования пациентов были сформированы группы практически здоровых пациентов и пациентов с хроническим герпетическим стоматитом на фоне рекурентного тонзиллита, с

хорошей гигиеной полости рта и положительным папиллярно-маргинально-альвеолярным индексом для дальнейшего исследования.

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САНГЗОРДАРЁ СОҲИЛИ СУВ МУХИТИ ОМИЛЛАРИНИНГ ИККИ ПАЛЛАЛИ МОЛЛЮСКАЛАР ОҒИРЛИГИ ВА ЧИҒАНОҚЛАРИ ЎЗГАРУВЧАНЛИГИГА ТАЪСИРИ

Аннотация: *Мақолада икки паллали моллюскаларнинг хўжаликдаги аҳамияти ва уларнинг биохилма-хиллигини сақлаш чора-тадбирлари хақида маълумотлар келтирилган.*

Калит сўзлар: *антропоген, биохилма-хиллик, оғирлик. абиотик, чиғаноқ моллюска, зичлик, дарё, харорат.*

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THE SANGARA IS HOME TO BIVALVES AND ARTHROPODS

Annotation: *The article provides information on the economic importance of bivalve molluscs and measures to preserve their biodiversity.*

Keywords: *anthropogenic, biodiversity, burden. abiotic, shell mollusk, density, river, temperature.*

Ўзбекистон худудидаги мавжуд ички сувлар ерларни суғоришда, тупроқ ҳосил бўлишида, ўсимликларнинг ривожланишида мухим аҳамиятга эга. Улар халқ хўжалиги саноат кархоналарини сув билан таъминлаш, экинларни суғориш ва маиший турмушда муҳим аҳамиятга эга. Ўзбекистон табиати ва табиий бойликларини муҳофаза қилиш - инсон учун зарур бўлган қазилма бойликлардан оқилона фойдаланиш, сув ва ҳавони тоза сақлаш, тупроқларни эьрозиядан сақлаш, ўсимлик ва ҳайвонот дунёсини табиий ҳолича асраб қолиб, қайта тиклаш ҳамда хушманзара жойларни шаршара, булоқлар ва бошқаларни табиий ҳолича сақлаш кабиларни ўз ичига олади.

Ўзбекистон сув ҳавзаларининг ифлосланишида зовур сувларининг ҳам таьсири бор. Чунки зовур сувлари ҳар хил эриган тузларни, пахта ва бошқа экинларга сепилган турли ҳил захарли кимёвий моддалар эритмасини

дарёларга олиб келади, натижада сувни ифлослайди. Сангзор дарёси сувларининг зовур сувлари билан ифлосланишини олдини олиш учун уларни иложи борича дарё, ариқ ёки сув омборларига ташлашга чек қўйиш керак. Сангзор дарёси сув экотизимларида сувнинг сифатини аниқлашда гидрабионтлар яхши индикатор бўлади. 1920 йил И.Кольквитц, Р.Маресонлар сувларнинг ифлосланишига кўра ажратганлар. Ўзбекистон Республикаси экология ва атроф-муҳитни муҳофаза қилиш кумитаси маълумотларига кўра Сангзор дарёси соҳилида тоза , ўртача ифлосланган ва ифлос сувлар мавжуд.

Ўрта оқим Ғаллаорол худудида (Сангзор қ.) ва қуйи оқими Жиззах шахридан ўтгач (Хайробод қ.) худудларида тахлил қилинди. Ўрта оқим Ғаллаорол худудида (Сангзор қ.) ҳудудида O2 миқдори 4,9±1,1 мг/л, нефт ва нефт махсулотлари 0,04±0,02 мг/л, минералланиш даражаси 884±62 мг/л. бўлганда 5 ёшли Sinanodonta gibba турининг оғирлиги 380 грамм, чиғаноқ узунлиги 146±3,1, чиғаноқ баландлиги 68±2,1, чиғаноқ қабариқлиги 74±2,6 ни; Corbiculina ferghanensis нинг оғирлиги 3,1 грам, чиғаноқ узулиги 21,5±2,3, чиғаноқ баландлиги 18±2,4, чиғаноқ қабариқлиги 12±1,1 ни ташкил этиши аниқланди. Ушбу ҳудуд дарёнинг ўрта қисмида жойлашганлиги сабабли сувнинг гидрокимёвий кўрсатгичлари РЭМ дан ошмаган. Дарёнинг қуйи қисмида жойлашган Хайробод қишлоғи яқинидаги сув таркибида O2 миқдори 5,7±1,0 мг/л. бўлиб бу миқдорнинг ўрта оқимда кўплиги қуй оимда сув ўтларининг кўплиги билпн боғлиқ бўлиши мумкин, будан ташқари қуйи оқимда нефт ва нефт махсулотлари 0,06±0,01 мг/л, минералланиш даражаси 1014±42 мг/л, бўлганда 5 ёшли Sinanodonta gibba турининг оғирлиги 312 грамм, чиғаноқ узулиги 131±3,1, чиғаноқ баландлиги 57±2,1, чиғаноқ қабариқлиги 65±2,2 ни, Corbiculina ferghanensis турининг оғирлиги 2,4 грам, чиғаноқ узулиги 17,5±1,6, чиғаноқ баландлиги 14,9±1,3, чиғаноқ қабариқлиги 9,4±1,0 ни ташкил этади. Бу ҳудудда сувларнинг гидрокимёвий кўрсатгичлари рухсат этилган миёрдан юқорилигини кўрсатди.

Икки паллали моллюскалар оғирлиги ва чиғаноқлари ўзгарувчанлигига таъсири (n=10, м²/дона)

Кўрсаткичлар	Ўрта оқим Ғаллаорол (Сангзор қ.) ҳудуди популяцияси. O_2 4,9±1,6 м/г (РЭМ К-4 Ё6), нефт ва нефт махсулотлари 0,04±0,02 мг/л (0,05), минералланиши 884±62 м/г (1000)	Қуйи оқими Жиззах шахридан ўтгач (Хайробод қ.) ҳудуди популяцияси. O_2 5,7±0,9 м/г (РЭМ К-4 Ё6), нефт ва нефт махсулотлари 0,06±0,01 мг/л (0,05), минералланиши 1014±43 м/г (1000)
Sinanodonta gibba		
Моллюскалар оғирлиги, г	380±9,4	312±8,9
Чиғаноқ узулиги, мм	146±3,1	131±3,1
Чиғаноқ баландлиги, мм	68±2,1	54±2,1
Чиғаноқ қабариқлиги, мм	74±2,6	65±2,2
Corbiculina ferghanensis		
Моллюскалар оғирлиги, г	3,1±0,6	2,4±0,3

Чиғаноқ узулиги, мм	21,5±2,3	17,5±1,6
Чиғаноқ баландлиги, мм	18±2,4	14,9±1,3
Чиғаноқ қабариқлиги, мм	12±1,1	9,4±1,0

Сувнинг гидрокимёвий кўрсатгичлари нефт ва нефт махсулотлари, минералланиш даражаси РЭМ дан юқори бўлмаган ва сув ҳарорати, оқим тезлиги, тиниқлиги икки паллали моллюскалар учун қулай бўлган ўрта оқим Ғаллаорол худудида (Сангзор қ.) яқинида моллюскаларнинг оғирлиги, чиғаноғининг узунлиги, баландлиги ва қабариқлиги ўсиши юқори эканлиги аниқланди. Қуйи оқими Жиззах шахридан ўтгач (Хайробод қ.) қисмида сувда нефт ва нефт махсулотлари, минералланиш даражаси РЭМ дан юқори бўлганлиги ифлосланганлиги сув муҳити омилларининг икки паллали моллюскалар оғирлиги, чиғаноғининг узунлиги, баландлиги ва қабариқлиги ўсиши чиғаноқларининг ўсишига маълум миқдорда чекловчи омил сифатида таъсир кўрсатиб чиғаноқларининг ўлчамлари кичик эканлиги кузатилди.

Сангзор дарёси саҳили сув экотизимларида тақалган турлар катаробли - тоза сувда яшовчи, олигасапробли - ўртача ифлос сувларда, β –мезасапробли – ифлосланган сувларда яшайдиган турларга гуруҳланди.

Сангзор дарёси соҳли сув экотизимлари булоқ, чашмалар, дарёлар ва сув омборларида тарқалган турларнинг популяцияларини сақлаб қолиш мақсадида муҳофаза чора-тадбирларни амалга оширишни таклиф этамиз.

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КОГНИТИВНЫЕ И КУЛЬТУРНЫЕ АСПЕКТЫ СОМАТИЧЕСКИХ ФРАЗЕОЛОГИЗМОВ В СОВРЕМЕННОЙ НЕМЕЦКОЙ ЛИТЕРАТУРЕ

Аннотация. *В статье рассматриваются когнитивные и культурные особенности соматических фразеологизмов в современной немецкой литературе. На основе анализа произведений Даниэля Кельмана, Юдит Германн, Бернхарда Шлинка и других авторов выявлены основные функции фразеологических единиц с компонентами тела (сердце, голова, рука, глаз и др.). Особое внимание уделяется метафорической репрезентации эмоций, когнитивных процессов и черт характера, а также их роли в построении дискурса и отражении культурных кодов. Исследование демонстрирует, что соматические фразеологизмы выполняют не только выразительную, но и когнитивно-регулятивную и культурно-семиотическую функцию, способствуя формированию образа персонажа и социокультурной интерпретации текста.*

Ключевые слова*: соматические фразеологизмы, немецкий язык, когнитивная лингвистика, метафора, культурный код, художественный дискурс, телесность, национальная ментальность, эмоции, современная литература*

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COGNITIVE AND CULTURAL ASPECTS OF SOMATIC PHRASEOLOGISMS IN MODERN GERMAN LITERATURE

Abstract*. The article explores the cognitive and cultural aspects of somatic phraseological units in contemporary German literature. Based on the analysis of works by Daniel Kehlmann, Judith Hermann, Bernhard Schlink, and others, the study identifies the main functions of phraseological expressions with body-related components (such as heart, head, hand, eye, etc.). Particular attention is given to the metaphorical representation of emotions, cognitive processes, and character traits, as well as their role in discourse construction and cultural encoding. The findings demonstrate that somatic phraseologisms serve not only expressive but also cognitive-regulatory and culture-specific semiotic functions, contributing to character development and sociocultural interpretation of the text.*

Keywords*: somatic phraseologisms, German language, cognitive linguistics, metaphor, cultural code, literary discourse, embodiment, national mentality, emotions, contemporary literature*

Введение. Современная лингвистика всё чаще обращается к изучению языковых единиц не только как средств передачи информации, но и как носителей культурного и когнитивного опыта. Особое внимание уделяется фразеологизмам — устойчивым словосочетаниям, в которых отражается исторический, ментальный и поведенческий опыт народа. В этом контексте соматические фразеологизмы — то есть фразеологические единицы, включающие названия частей тела, — представляют собой чрезвычайно ценный материал для анализа [2].

Во-первых, такие выражения часто используются для описания эмоций, психических состояний, волевых или моральных качеств личности, что делает их важными элементами дискурса. Во-вторых, телесная образность универсальна, однако способы её языкового воплощения варьируются от культуры к культуре, что даёт возможность выявить и проанализировать национально-культурные различия.

Таким образом, фразеологизмы с компонентами Herz, Hand, Kopf, Auge, Magen, Rücken и другими отражают не только биологическую телесность, но и концептуальные метафоры, структурирующие ментальный мир носителей языка. Например, „ein Herz aus Stein haben“ — это не просто характеристика эмоционального состояния, а проявление культурной концептуализации «жестокости» через отсутствие нормальной функции сердца.

В последнее десятилетие в германистике усилился интерес к изучению фразеологизмов в литературном контексте. Это объясняется тем, что литература не только воспроизводит, но и трансформирует языковые стереотипы, играя с ними и создавая новые смысловые оттенки. С этой точки зрения, изучение соматических фразеологизмов в современной немецкой прозе позволяет получить более полное представление о способах выражения индивидуального и коллективного опыта.

Целью настоящего исследования является выявление когнитивных и культурных аспектов функционирования соматических фразеологизмов в произведениях современной немецкой литературы.

Методы исследования. Для достижения поставленных целей был использован комплексный междисциплинарный подход, сочетающий методы когнитивной лингвистики, фразеологии, дискурс-анализа и культурологии.

Прежде всего, на первом этапе было осуществлено сплошное выборочное извлечение соматических фразеологизмов из произведений современной немецкой прозы, созданных в период с 2000 по 2024 год. В качестве корпуса исследования были отобраны тексты следующих авторов:

Даниэль Кельман («Ich und Kaminski», «Tyll»);

Юдит Германн («Sommerhaus, später», «Alice»);

Бернхард Шлинк («Der Vorleser», «Die Heimkehr»);

Жюли Це («Unterleuten»);

Дженни Эрпенбек, Вольф Хаас, Клеменс Майер и др.

Во-вторых, все выявленные фразеологизмы были классифицированы по структурному компоненту (например, Herz, Kopf, Hand, Auge, Bein, Rücken,

Magen) и тематике (эмоциональные состояния, поведение, этические характеристики, когнитивные процессы).

Далее, применялся метод когнитивного моделирования: выявлялись метафорические схемы, отражённые в семантике выражений (например, метафоры типа тело — эмоциональный состояние, рука — контроль, голова — разум), а также концептуальные оппозиции (разум / чувство, сила / слабость, активность / пассивность и др.).

Кроме того, осуществлялся дискурсивный анализ контекстов употребления фразеологизмов с целью выявления их прагматических функций: оценочной, экспрессивной, идентификационной, коммуникативно-регулятивной.

Наконец, в исследование был включён культурологический аспект: анализировалась символика тела в немецкой культуре, соотнесённость фразеологизмов с национальными ментальными конструктами, прецедентными текстами, устойчивыми поведенческими моделями.

Таким образом, сочетание количественного и качественного анализа позволило глубже понять природу соматических фразеологических единиц, выявить специфику их функционирования в немецком художественном дискурсе и установить соотношение между языковой формой и культурным содержанием.

Результаты. В результате анализа современных немецкоязычных литературных произведений было выявлено более 150 случаев употребления соматических фразеологизмов, включающих компоненты Herz, Hand, Kopf, Auge, Magen, Bein, Rücken и др. Эти выражения выполняли разнообразные социо-коммуникативные и художественно-дискурсивные функции, что позволяет выделить следующие основные группы.

1. Выражение эмоций и ментальных состояний

Наиболее распространённой является группа фразеологизмов, репрезентирующих внутреннее состояние персонажа:

„Das Herz rutschte ihm in die Hose.“ (букв. «Сердце скатилось в штаны») — испуг, тревога.

Пример: В романе Кельмана «Tyll» фразеологизм используется в момент, когда герой узнаёт о казни отца.

„Mir stockte das Herz.“ (букв. «У меня застыло сердце») — шок, сильный страх. У Германн это выражение вводит сцену неожиданного признания между героями.

„Ihm brach das Herz.“ (букв. «У него разорвалось сердце») — сильная печаль, страдание. Шлинк использует данную метафору в сцене прощания в романе «Die Heimkehr» [4, 32-37].

Эти фразеологизмы отражают концептуализацию эмоций через телесные процессы, в соответствии с метафорой сердце — центр чувств.

2. Характеризация поведения и личностных качеств

Фразеологизмы используются для описания черт характера и поведенческих тенденций:

„Er hat das Herz auf der Zunge.“ (букв. «У него сердце на языке») — открытый, искренний человек. В тексте Жюли Це это характеристика деревенского активиста, противопоставленного бюрократам.

„Sie hat zwei linke Hände.“ (букв. «У неё две левые руки») — неумелость, неловкость. В рассказе Германн это используется с самоиронией: героиня описывает себя, пытаясь приготовить обед.

„Den Kopf in den Sand stecken.“ (букв. «Спрятать голову в песок») — избегать проблем. Пример из Кельмана: герой предпочитает молчать о семейном кризисе, делая вид, что «ничего не происходит».

„Mit beiden Beinen im Leben stehen.“ (букв. «Стоять обеими ногами в жизни») — быть реалистом, твёрдо стоять на ногах. Один из женских персонажей у Шлинка описывается через эту метафору как надёжная опора для других [5].

3. Репрезентация когнитивных процессов

Отдельную группу составляют фразеологизмы, связанные с мышлением, восприятием, пониманием:

„Kopf verlieren.“ (букв. «Потерять голову») — растеряться, паниковать. У Эрпенбек фраза появляется в момент катастрофического выбора: герой не знает, как поступить.

„Ein Auge zudrücken.“ (букв. «Закрыть один глаз») — сознательно игнорировать. Жюли Це использует фразеологизм в критике политических структур, закрывающих глаза на конфликты.

„Etwas im Hinterkopf behalten.“ (букв. «Держать что-то в затылке») — не забывать, иметь в виду. В «Unterleuten» эта метафора иллюстрирует латентную подозрительность персонажей.

Эти примеры свидетельствуют о метафорической связи частей тела (глаз, голова, затылок) с функциями восприятия и памяти.

4. Социальная оценка и модальность

Фразеологизмы нередко выполняют оценочную функцию, выражая суждение о действиях, мотивах и моральном облике героев:

„Er hat kein Rückgrat.“ (букв. «У него нет позвоночника») — человек без принципов, слабовольный. Используется в тексте Клеменса Майера по отношению к политическому персонажу.

„Mit Herz und Hand dabei sein.“ (букв. «Быть с сердцем и рукой») — быть преданным делу. В рассказах Германн это выражение характеризует волонтёров, заботящихся о стариках.

„Sich kein Bein ausreißen.“ (букв. «Не вырвать себе ногу») — не прилагать усилий. В сатирическом романе Хааса используется с иронией при описании ленивых чиновников.

5. Символизация телесности и художественные функции

Некоторые фразеологизмы в литературе получают символический смысл, выходящий за пределы стандартной идиоматики:

„Hände gebunden haben.“ (букв. «Иметь связанные руки») — быть бессильным. У Шлинка это метафора вины и моральной невозможности вмешательства в прошлое.

„Ins Gesicht geschrieben stehen.“ (букв. «Написано на лице») — открытость эмоций, отсутствие тайны. Герой Кельмана в сцене разоблачения буквально описывается через эту фразу.

„Etwas geht an die Nieren.“ (букв. «Что-то бьёт по почкам») — тяжело восприниматься эмоционально. Это выражение используется для описания реакции на сцену насилия [1].

Таким образом, фразеологизмы с соматическими компонентами активно используются в немецкой прозе как средства выражения внутреннего мира, оценки, конфликта, а также как инструменты символизации и культурной репрезентации. Их устойчивость сочетается с возможностью художественной трансформации, что делает их мощным стилистическим и концептуальным ресурсом.

Обсуждение. Как показал анализ, соматические фразеологизмы в современной немецкой литературе выполняют многоуровневую когнитивно-дискурсивную функцию, сочетающую в себе элементы оценочности, эмоциональности, социального кодирования и культурной символики. Прежде всего, выявляется устойчивая связь между телесной метафорикой и когнитивными моделями, отражающими универсальные категории человеческого восприятия: страх, радость, воля, слабость, решимость. Например, фразеологизмы с компонентом Herz («сердце») почти всегда служат индикатором эмоционального состояния, а выражения с Kopf («голова») — когнитивной сферы. Это подтверждает универсальность концептуальных метафор, описанных Дж. Лакоффом и М. Джонсоном (1980): эмоции — это физическое состояние, разум — верхняя часть тела, контроль — рука.

Однако, в немецкой языковой картине мира эти метафоры реализуются специфическим образом, отражая особенности немецкой культуры, такие как высокая ценность рациональности, социальной ответственности и порядочности. Например:

„Rückgrat haben“ (иметь позвоночник) — важная черта для немца как социального субъекта, готового отстаивать принципы;

„Mit Herz und Hand“ — выражение искреннего, сознательного участия, что перекликается с немецкой трудовой этикой;

„Kein Blatt vor den Mund nehmen“ (не держать лист перед ртом) — прямота и честность как часть национального характера.

С другой стороны, литературный контекст позволяет авторам играть с устойчивыми выражениями, разрушать клише, переосмысливать телесные образы. Например, в романах Кельмана и Эрпенбек фразеологизмы включаются в иронические, философские и даже абсурдные контексты, создавая семантические сдвиги и многозначность. Это подтверждает тезис о

литературе как пространстве трансформации идиоматики и вторичной семиотизации.

Интересно отметить, что в сопоставлении с русским языком некоторые соматические фразеологизмы имеют прямые аналоги („das Herz rutschte in die Hose“ — «душа в пятки ушла»), тогда как другие отражают уникальные концептуальные модели („sich kein Bein ausreißen“ — букв. «не рвать себе ногу», в русском отсутствует аналог с таким телесным компонентом). Это свидетельствует о частичном пересечении ментальных карт, но с различиями в символической и прагматической нагрузке.

Таким образом, современные немецкие литературные тексты используют соматические фразеологизмы не только как средство передачи смысла, но и как культурный код, сигнализирующий о социальной позиции, психологическом состоянии, или глубинных личностных мотивациях героев. Их актуализация в художественном дискурсе служит не просто украшением, а инструментом когнитивной и этической репрезентации.

Заключение. Проведённое исследование показало, что соматические фразеологизмы в современной немецкой литературе играют важную роль в отражении когнитивных процессов, эмоциональных состояний и культурных ценностей. Их использование в художественных текстах позволяет не только создать яркий образ или передать психологическую характеристику персонажа, но и структурировать повествование на концептуальном уровне.

Во-первых, телесные образы в составе фразеологизмов демонстрируют устойчивые метафорические модели, в которых тело выступает универсальным источником когнитивной проекции. Во-вторых, анализ показал, что немецкие авторы активно используют такие выражения для раскрытия внутреннего мира героев, их мировоззрения, а также для создания иронического или критического эффекта.

Кроме того, сопоставление с аналогичными конструкциями в других языках, в частности в русском, позволяет утверждать, что телесная метафорика обладает как универсальными, так и культурно-специфическими чертами. Это делает её значимым объектом не только для лингвистического, но и для межкультурного анализа.

Таким образом, соматические фразеологизмы можно рассматривать как сложные языковые единицы, в которых синтезированы когнитивный опыт, культурная традиция и художественная стратегия. Их изучение способствует более глубокому пониманию не только языка, но и ментальности его носителей, а также расширяет инструментарий анализа литературных текстов.

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ВЛИЯНИЕ ФИЗИЧЕСКОЙ ПОДГОТОВКИ НА СЕРДЕЧНО-СОСУДИСТУЮ СИСТЕМУ: СРАВНЕНИЕ АДАПТАЦИЙ У СПОРТСМЕНОВ С РАЗЛИЧНЫМИ УРОВНЯМИ ТРЕНИРОВАННОСТИ

Аннотация:*Физическая активность оказывает значительное влияние на здоровье сердечно-сосудистой системы, вызывая адаптивные изменения, которые улучшают как функциональные, так и структурные показатели сердца и сосудов. В данной статье рассматриваются особенности этих адаптаций у спортсменов с различными уровнями тренированности, от новичков до профессионалов. В частности, осуществлено сравнение изменений в объеме ударного выброса, частоте сердечных сокращений и капилляризации тканей. Также представлены теоретические аспекты, касающиеся физиологии тренировочного процесса, и практические рекомендации, ориентированные на оптимизацию кардиоваскулярных показателей в зависимости от уровня физической подготовки.*

Ключевые слова: *физическая подготовка, сердечно-сосудистая система, адаптации, спортсмены, тренированность.*

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EFFECT OF PHYSICAL TRAINING ON THE CARDIOVASCULAR SYSTEM: COMPARISON OF ADAPTATIONS IN ATHLETES WITH DIFFERENT LEVELS OF FITNESS

Abstract:*Physical activity has a significant impact on cardiovascular health, inducing adaptive changes that improve both functional and structural cardiac and vascular performance. This article examines the characteristics of these adaptations in athletes with different levels of training, from beginners to professionals. In particular, changes in stroke volume, heart rate and tissue capillarization are compared. Theoretical aspects concerning the physiology of the training process and practical recommendations oriented to the optimization of cardiovascular parameters depending on the level of physical training are also presented.*

Key words: *physical training, cardiovascular system, adaptations, athletes, fitness.*

Введение

Современные исследования убедительно демонстрируют, что регулярная физическая активность играет ключевую роль в поддержании и улучшении здоровья сердечно-сосудистой системы. Тренировки способствуют снижению риска развития сердечно-сосудистых заболеваний, улучшению сердечной функции и повышению общей выносливости организма. Тем не менее, характер и степень этих адаптаций могут значительно варьироваться в зависимости от уровня физической подготовки и тренированности.

На сегодняшний день существует множество исследований, посвященных физиологическим изменениям, происходящим у спортсменов под воздействием регулярных тренировок. Однако большинство из них сфокусированы на профессионалах или новичках, в то время как широкая гамма промежуточных уровней тренированности изучена недостаточно. Настоящая статья стремится восполнить этот пробел, рассматривая, как различная степень тренировочного опыта влияет на структуру и функции сердечно-сосудистой системы у спортсменов. Основное внимание уделено метаболическим и анатомическим изменениям, происходящим в сердце и сосудах, а также их значению для общего состояния здоровья и спортивной производительности.

Материалы и методы

Физическая подготовка определяется как состояние готовности организма к выполнению физической активности. Она влияет на множество систем тела, включая сердечно-сосудистую систему (ССС). Эта система отвечает за циркуляцию крови, что является важным для доставки кислорода и питательных веществ к клеткам. Исследования показывают, что различные уровни физической подготовки могут приводить к разным адаптациям в сердечно-сосудистой системе. Например, профессиональные спортсмены, любители и новички показывают разные реакции и адаптации на нагрузки.

Профессиональные спортсмены, как правило, имеют более выраженные адаптации по сравнению с любителями и начинающими. У них наблюдается более низкий сердечный ритм в состоянии покоя, что говорит о высокой эффективности их сердца. Энергоэффективность сердца у таких спортсменов объясняется увеличением объема сердца и улучшением его функции. Кайдалов утверждает, что физическая активность приводит к значительным изменениям в функции сердца и сосудов[1]. Это подчеркивает важность уровня подготовки для понимания сердечно-сосудистых ответов на физическую нагрузку.

В отличие от профессиональных спортсменов, любители и новички могут проявлять менее адаптированные реакции на те же нагрузки. Например,

их сердце может не адаптироваться так же эффективно, что может привести к более высокому уровню сердечного ритма и менее эффективной циркуляции крови во время и после физической активности. Гигиена физической культуры и спорта подтверждает, что различия в сердечно-сосудистой реакции на физическую нагрузку могут наблюдаться у подготовленных и неподготовленных людей[2].

Кроме того, стоит обратить внимание на то, как уровень тренированности варьируется в зависимости от возраста, пола и других факторов. Гендерные особенности тоже могут влиять на ССС адаптацию. Исследования показывают, что существует разница в сердечно-сосудистой реакции между мужчинами и женщинами, особенно в ответ на физическую нагрузку. Гибадуллин и другие указывают на то, что гормональные и физиологические различия могут влиять на реакции сердечно-сосудистой системы у женщин и мужчин[3].

Таким образом, изучение влияния физической подготовки на сердечно-сосудистую систему важно для понимания того, как адаптации могут различаться у профессиональных спортсменов, любителей и начинающих. Сравнение реакций этих групп на физическую нагрузку поможет выявить, какие механизмы отвечают за адаптацию и как их можно использовать для повышения физической активности и предотвращения сердечно-сосудистых заболеваний., Профессиональные спортсмены, любители и начинающие спортсмены имеют разные уровни физической подготовки, что влияет на их сердечно-сосудистую систему. Профессиональные спортсмены чаще всего показывают наилучшие сердечно-сосудистые показатели. Это связано с тем, что они занимаются физической активностью на высоком уровне и в течение длительного времени. Такие спортсмены, как правило, имеют более низкий сердечный ритм в покое и более высокую максимальную кислородную способность (VO2 max), что свидетельствует о лучшей функциональности сердечно-сосудистой системы [4].

На уровне любителей наблюдается ряд изменений, которые не столь выражены, как у профессионалов, но все же значительны. У любителей часто есть интерес к занятиям спортом, однако неправильные методы тренировок могут привести к потенциальным проблемам со здоровьем. Например, слишком интенсивные тренировки без достаточного времени для восстановления могут вызвать стресс на сердце и привести к травмам [5]. Кроме того, любители могут не всегда придерживаться научно обоснованных программ тренировок, что также влияет на их адаптации сердечно-сосудистой системы.

Начинающие спортсмены находятся на самом базовом уровне физической подготовки. Их адаптации обычно сосредоточены на улучшении общей выносливости и функциональности сердца. Такие изменения могут включать увеличение объема сердца и улучшение кровообращения, что помогает предотвратить будущие заболевания сердечно-сосудистой системы. Эти базовые изменения крайне важны, так как они закладывают фундамент

для более сложных адаптаций в будущем, когда уровень физической нагрузки увеличивается.

У разных групп людей также существуют различные механизмы, с помощью которых физическая активность положительно влияет на здоровье сердечно-сосудистой системы. Профессиональные спортсмены, благодаря своим тренировкам, достигают длительных и часто стойких изменений в работе сердца и сосудистой системы, таких как улучшение эластичности сосудов и снижение уровня воспалительных маркеров [1]. Такие адаптации являются результатом не только физической нагрузки, но и правильного питания, восстановления и общего образа жизни.

У любителей и новичков такие механизмы могут быть менее выраженными. Например, начинающие спортсмены могут столкнуться с временными изменениями в сердечно-сосудистой системе, которые являются реакцией на новые физические нагрузки, но не достигают уровня защитных адаптаций, характерных для профессиональных спортсменов. Однако регулярная физическая активность даже на этом уровне может значительно улучшить общее состояние здоровья и снизить риск развития сердечно-сосудистых заболеваний в будущем.

Таким образом, разница в уровнях физической подготовки приводит к различиям в адаптациях сердечно-сосудистой системы между профессиональными спортсменами, любителями и начинающими. Понимание этих различий важно для формирования эффективных программ тренировок и профилактики заболеваний.

Результаты и обсуждения

Учитывая многоуровневую природу адаптаций сердечно-сосудистой системы к физическим нагрузкам, необходимо соблюдать индивидуальный подход к тренировкам для достижения оптимальных результатов и поддержания здоровья.

Рекомендации для начинающих спортсменов. Для тех, кто только начинает заниматься спортом, ключевым аспектом является постепенное введение физических нагрузок. Начать следует с умеренной интенсивности тренировок и постепенно увеличивать их продолжительность и сложность, что позволит избежать перегрузок и минимизировать риск повреждений системы кровообращения. Регулярные занятия аэробными упражнениями, такими как ходьба, легкий бег или плавание, ускоряют привыкание организма к физической активности. Также стоит уделить внимание укреплению мышц кора и общей гибкости, что способствует улучшению общей физической подготовки и снижению нагрузки на сердце.

Рекомендации для спортсменов среднего уровня. На этом этапе спортсменам рекомендуется сосредоточиться на развитии аэробной выносливости и включении в программу тренировок элементов высокоинтенсивных нагрузок, таких как интервальные тренировки. Это способствует улучшению кислородного обмена и повышению общей работоспособности. Особое внимание нужно уделять сбалансированности

между тренировками разной интенсивности и преднамеренным развитием силовых показателей, что способствует более эффективному функционированию сердечно-сосудистой системы и улучшению общей выносливости.

Рекомендации для профессиональных спортсменов. Профессионалы должны применять дифференцированный подход к своему тренировочному процессу, который включает учет как интенсивных нагрузок, так и периодов восстановления. Высокая интенсивность тренировок должна быть сбалансирована с адекватными периодами отдыха, что предотвращает развитие синдрома перетренированности и способствует длительному поддержанию оптимальной спортивной формы. Уделение внимания профилактике травм, интеграция новых методик тренировок и регулярное мониторирование состояния здоровья помогают в поддержании высокого уровня физической готовности и долгосрочной спортивной карьеры.

Эти рекомендации помогают оптимизировать тренировочный процесс, способствуя эффективным адаптациям сердечно-сосудистой системы и улучшению спортивных результатов на каждом уровне физической подготовки.

Заключение

Исследование подтверждает, что степень физической подготовки определяет характер адаптивных изменений сердечно-сосудистой системы. Выявленные различия между профессиональными спортсменами, любителями и начинающими обосновывают необходимость индивидуального подхода к тренировкам. Продолжение исследований в этой области позволит повысить эффективность тренировочных программ и разработать более точные рекомендации для профилактики сердечно-сосудистых заболеваний в долгосрочной перспективе.

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ПРОЕКТИРОВАНИЕ СТРУКТУРЫ И АРХИТЕКТУРЫ ПРОГРАММНОГО ОБЕСПЕЧЕНИЯ ДЛЯ ОЦЕНКИ ПРОФЕССИОНАЛЬНЫХ КОМПЕТЕНЦИЙ ПЕРСОНАЛА С ИСПОЛЬЗОВАНИЕМ SPRING FRAMEWORK

Аннотация: *В статье рассматриваются принципы проектирования структуры и архитектуры веб-приложения для тестирования профессиональных компетенций персонала с использованием Spring Framework. Описана организация слоёв приложения, логическая и физическая модели данных, а также особенности выбора монолитной архитектуры.*

Ключевые слова: *проектирование архитектуры, информационная система, оценка компетенций, Spring Framework, логическая и физическая модели, монолитная архитектура.*

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DEVELOPMENT OF A WEB-APPLICATION FOR TESTING PROFESSIONAL COMPETENCIES OF PERSONNEL USING THE SPRING FRAMEWORK ON THE EXAMPLE OF JSC «GOMSELMASH»

Abstract: *The article discusses the principles of designing the structure and architecture of a web application for testing professional competencies of personnel using the Spring Framework. It describes the organization of application layers, logical and physical data models, and the choice of a monolithic architecture. The work focuses on the use of modern technologies for effective competency assessment of employees.*

Keywords: *architecture design, information system, competency assessment, Spring Framework, logical and physical models, monolithic architecture.*

Тестирование профессиональных компетенций персонала с использованием Spring Framework — это задача, которая может включать разработку веб-приложения или сервиса для создания, проведения и оценки тестов. Spring Framework предоставляет мощные инструменты для построения таких систем, включая Spring Boot, Spring MVC, Spring Data и другие.

Общие рекомендации по проектированию системы тестирования компетенций с использованием Spring Framework включают:

1. Постановку задачи (создание системы, позволяющей администраторам создавать и редактировать тесты (вопросы с вариантами ответов); пользователям проходить тесты; проводить автоматическое оценивание, хранение и анализ результатов.
2. Создание архитектуры приложения:

– backend: Spring Boot (REST API);

– база данных: реляционная (например, PostgreSQL)

– frontend: можно использовать любой фреймворк (Angular, React) или Thymeleaf для серверного рендеринга

– безопасность: Spring Security для аутентификации и авторизации

Создание архитектуры приложения для оценки профессиональных компетенций персонала с использованием Spring Framework требует тщательного планирования. Ниже представлена примерная структура, которая включает в себя основные компоненты и слои приложения (рисунок 1).

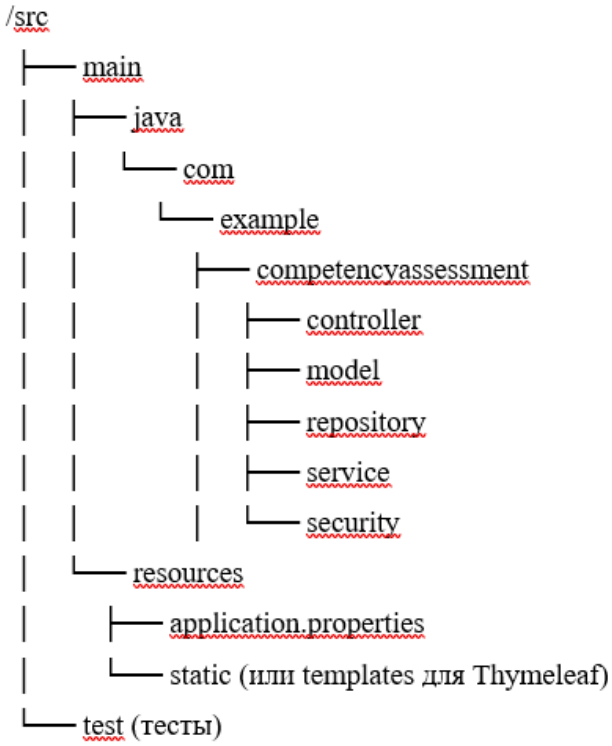

Рисунок 1 – Архитектура приложения (общая структура)

Разработка логической и физической модели программного обеспечения оценки профессиональных компетенций персонала организации произведено с помощью Oracle SQL Developer Data Modeler.

Oracle SQL Developer Data Modeler – это комплексное решение, позволяющее разработчикам проектировать реляционные модели взаимосвязей объектов для последующего преобразования их в полноценные БД. Продукт поддерживает логическое, реляционное, многомерное моделирование и моделирование типов данных, предлагая возможности многоуровневого проектирования и построения концептуальных диаграмм сущностей и связей. Пользователи могут создавать, расширять и модифицировать модели, а также сравнивать их с уже существующими [2, с. 26].

На рисунке 2 представлена логическая модель веб-приложения тестирования компетентности работников предприятия.

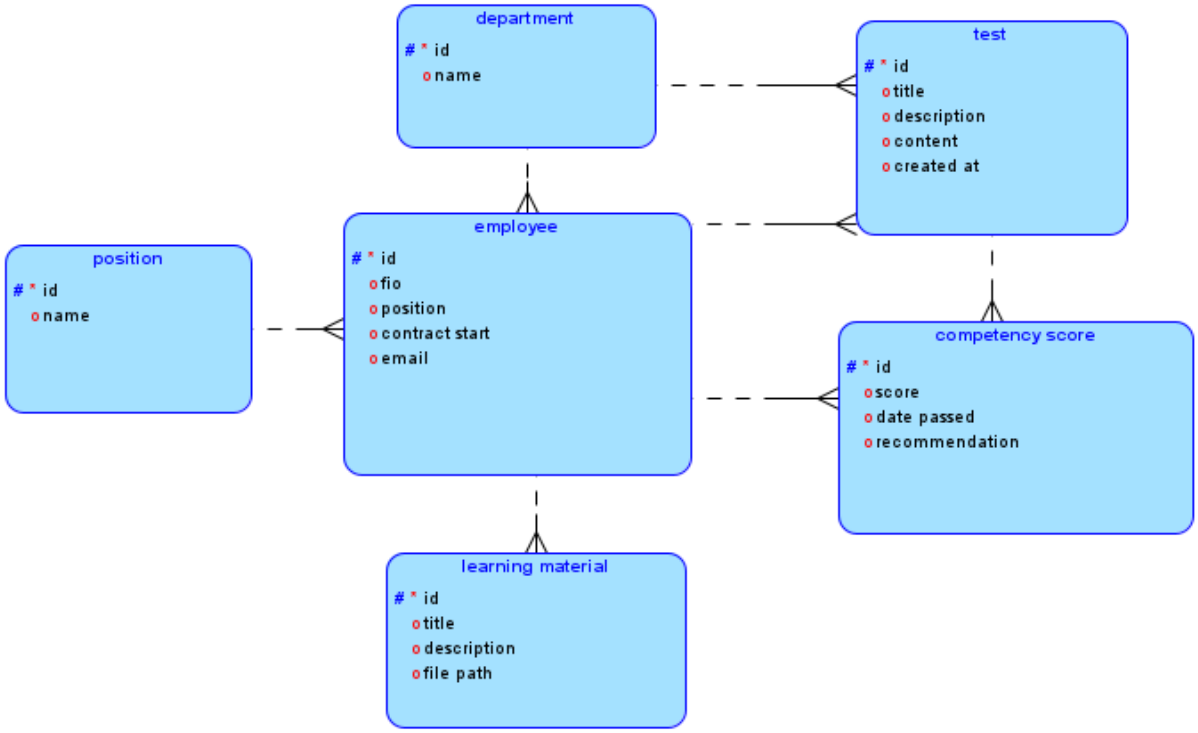

Рисунок 2 – Логическая модель

В логической модели данных имеются только виды связей между таблицы, но не внешние ключи. Это связано с подходом работы с Oracle SQL Developer Data Modeler. Данное обеспечение автоматически создает внешние ключи при переходе на физическую модель, поэтому ставить внешние ключи в логической модели не имеет смысла.

Логическая модель включает 8 таблиц:

– сотрудники (хранение личных данных, должности, подразделения).

– департаменты (информация о структурных единицах).

– должности (определение ролей и доступа).

– тесты (вопросы и ответы для оценки).

– пройденные тесты (результаты и динамика).

– материалы для обучения (документы для повышения квалификации).

Физическая модель, разработанная для СУБД PostgreSQL, детализирует типы данных, ключи и ограничения, обеспечивая надёжное хранение и обработку информации. Такой подход позволяет структурировать данные и упростить их использование в системе. Она представлена на рисунке 3.

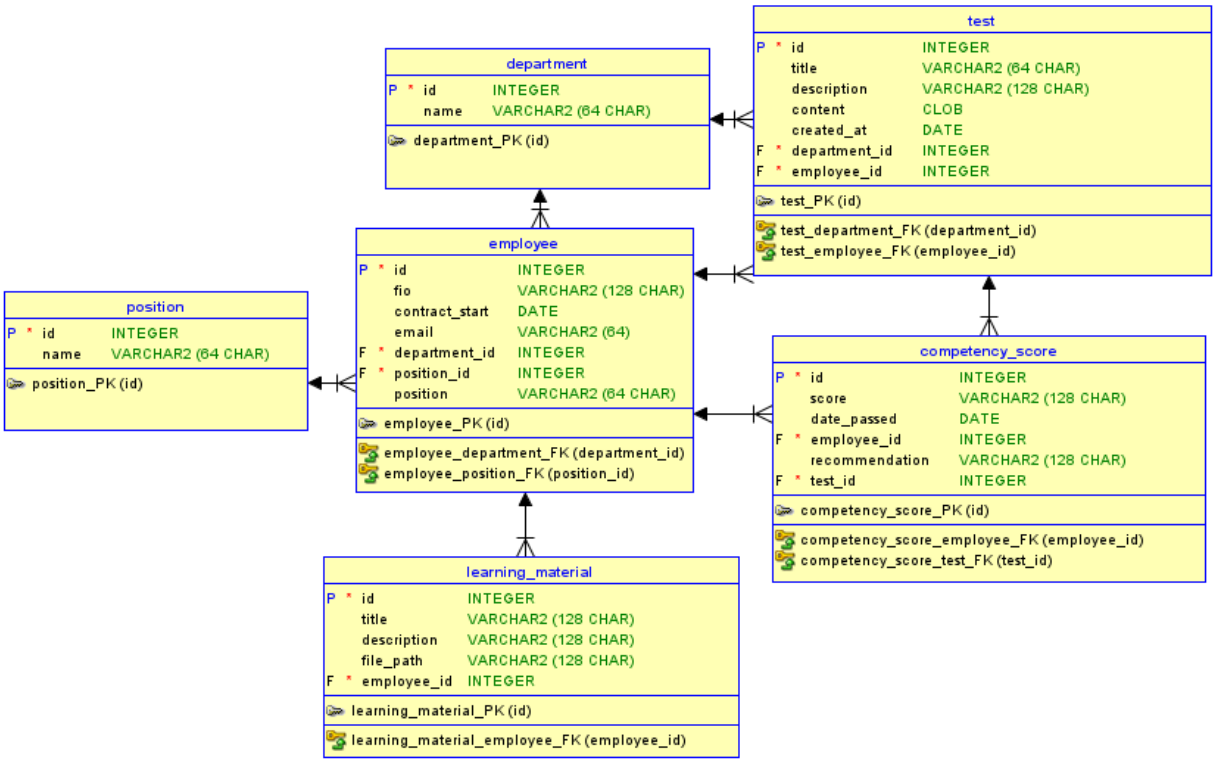

Рисунок 3 – Физическая модель

Вся внутренняя техническая часть разработана с помощью Spring Framework и языка программирования Java. Была выбрана монолитная архитектура. Так как информационная система является не слишком большой. Кроме того, использование микросервисной архитектуры влечет за собой увеличение затрат и времени.

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КЛЮЧЕВАЯ РОЛЬ ГИДРОАККУМУЛИРУЮЩИХ ЭЛЕКТРОСТАНЦИЙ В СТАБИЛИЗАЦИИ ЭНЕРГЕТИЧЕСКОЙ СИСТЕМЫ УЗБЕКИСТАНА

Аннотация: *В современной энергетике одной из ключевых задач является эффективное распределение и надежное хранение произведённой электроэнергии. Одним из наиболее действенных решений этой проблемы выступают гидроаккумулирующие электростанции (ГАЭС), которые позволяют накапливать избыточную энергию и возвращать её в сеть в периоды пиковой нагрузки. Этот тип электростанций успешно применяется во многих странах мира для повышения устойчивости энергосистемы, сглаживания суточных колебаний потребления и предотвращения дефицита электроэнергии.*

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THE CRUCIAL ROLE OF PUMPED STORAGE HYDROPOWER PLANTS IN STABILIZING THE POWER SYSTEM OF UZBEKISTAN

Abstract: *In modern energy, one of the key tasks is the efficient distribution and reliable storage of produced electricity. One of the most effective solutions to this problem are pumped storage power plants (PSPP), which allow you to accumulate excess energy and return it to the network during peak load periods. This type of power plant is successfully used in many countries around the world to increase the stability of the energy system, smooth out daily fluctuations in consumption and prevent electricity shortages.*

В статье рассматриваются принцип работы, преимущества и роль гидроаккумулирующие электростанций (ГАЭС) в хранении и распределении электроэнергии. ГАЭС является неотъемлемой частью современной энергетической системы, позволяя ей хранить электроэнергию в периоды избыточного производства и повторно производить ее, когда спрос на

энергию возрастает. В статье анализируется экономическая эффективность, экологическая безопасность и перспективы применения ГАЭС в Узбекистане.

Ключевой проблемой современных энергетических систем является временной разрыв между производством и потреблением электроэнергии. Широкое использование возобновляемых источников энергии делает эту проблему еще более актуальной. В этих условиях гидроэлектростанции являются одним из наиболее эффективных решений, позволяющих временно хранить энергию и производить ее повторно при увеличении спроса.

Технология ГАЭС считается выгодным решением не только с технической, но и с экономической и экологической точек зрения [1].

Технология гидроаккумулирующих электростанций (ГАЭС) рассматривается как одно из наиболее перспективных решений в современной энергетике, поскольку она обладает целым рядом преимуществ — не только с технической точки зрения, обеспечивая стабильность и надежность энергоснабжения, но и с экономической — благодаря снижению затрат на пиковую электроэнергию и повышению эффективности использования ресурсов. Кроме того, с экологической точки зрения ГАЭС являются более безопасной и экологически чистой альтернативой по сравнению с традиционными тепловыми электростанциями, так как они не выбрасывают вредных веществ в атмосферу и минимально воздействуют на окружающую среду.

Материалы и методы исследования

Принцип работы ГАЭС

ГАЭС обычно состоит из двухступенчатого резервуара: верхнего и нижнего. При снижении спроса на электроэнергию вода закачивается из нижнего резервуара с помощью насосов во время избыточной выработки. Когда потребность в электроэнергии возрастает, верхняя вода стекает вниз и приводит в действие турбину, вырабатывающую электроэнергию [2].

Технические и экономические преимущества

ГАЭС имеет следующие преимущества:

- Быстрый запуск и выключение (в течение нескольких минут);
- КПД около 70–85%;
- Длительный срок службы и низкие требования к обслуживанию;
- Возможность обеспечения стабильности системы при пиковых нагрузках.

С экономической точки зрения, ГАЭС, хотя и требует высоких первоначальных капитальных затрат, позволяет производить энергию с низкой себестоимостью в долгосрочной перспективе, что особенно выгодно в часы пик, когда цены на энергоносители высоки [3].

Экологические аспекты

ГАЭС — экологически чистая технология. Он не связан с выбросами загрязняющих газов и осуществляется за счет использования природных водных ресурсов. Однако масштабные проекты ГАЭС требуют проведения

экологического мониторинга и оценки их воздействия на региональную экосистему [4].

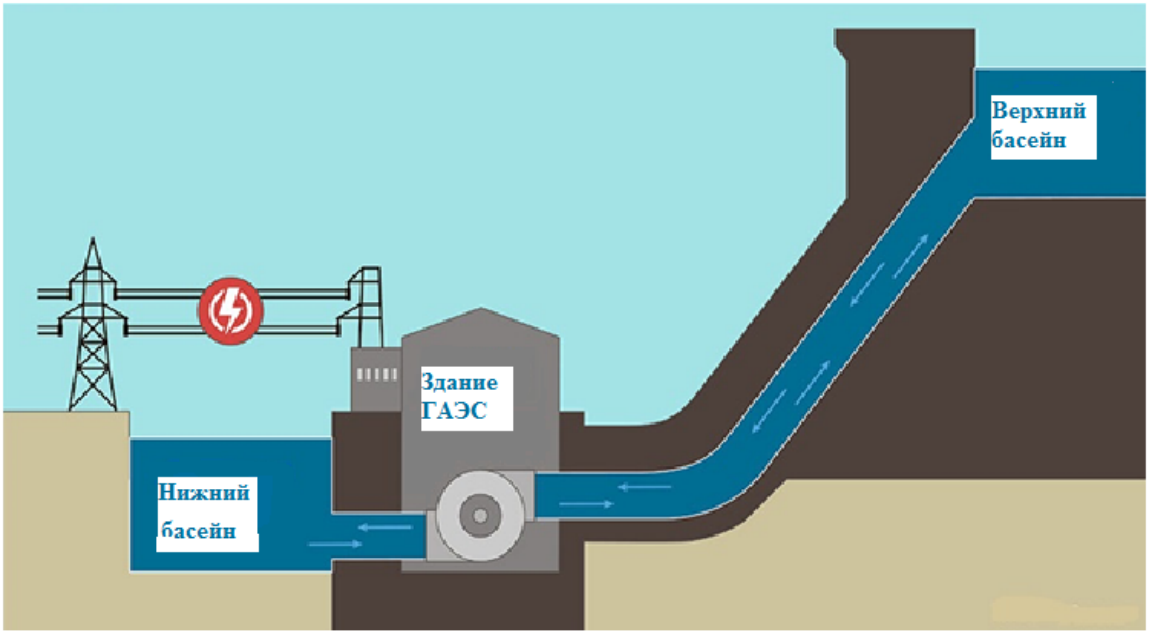

Рис. 1. Полученные результаты и их обсуждение.

С помощью технологии ГАЭС можно достичь следующих результатов:

- Преодоление разрыва между производством и потреблением электроэнергии: С помощью технологии гидроаккумулирующих электростанций (ГАЭС) можно добиться ряда важных результатов, среди которых особенно выделяется преодоление разрыва между производством и потреблением электроэнергии. Благодаря возможности аккумулировать избыток электроэнергии в периоды ее минимального потребления (например, ночью) и быстро возвращать её в сеть в часы пиковых нагрузок, ГАЭС обеспечивают баланс между выработкой и спросом. Это позволяет повысить стабильность энергосистемы, сократить необходимость в резервных мощностях, а также оптимизировать работу базовых электростанций, минимизируя потери и снижая затраты на эксплуатацию инфраструктуры.

- Содействовать интеграции возобновляемых источников энергии в электросеть: С помощью технологии гидроаккумулирующих электростанций (ГАЭС) можно существенно способствовать интеграции возобновляемых источников энергии, таких как солнечная и ветровая генерация, в общую энергосистему. Поскольку производство энергии из возобновляемых источников носит нерегулярный и непредсказуемый характер из-за зависимости от погодных условий, возникает необходимость в эффективных механизмах накопления энергии. ГАЭС играют в этом процессе ключевую роль: они способны аккумулировать избыточную электроэнергию, вырабатываемую в периоды высокой генерации (например, в солнечные или ветреные дни), и отдавать её в сеть в моменты снижения производства. Таким

образом, ГАЭС обеспечивают более плавную и стабильную интеграцию ВИЭ в энергосистему, повышая надёжность и устойчивость электроснабжения.

- Повышение надежности и стабильности электрической системы: С помощью технологии гидроаккумулирующих электростанций (ГАЭС) можно значительно повысить надёжность и стабильность функционирования электрической системы. ГАЭС обеспечивают оперативное регулирование частоты и мощности в сети, компенсируя внезапные колебания нагрузки или производства электроэнергии. В случае аварийных ситуаций или резких изменений потребления они могут быстро вводиться в работу, выдавая в сеть необходимую мощность в течение нескольких минут. Это позволяет предотвратить отключения, снизить риск перебоев в электроснабжении и поддерживать требуемые параметры качества электроэнергии. Таким образом, ГАЭС являются важным элементом системной устойчивости современных энергосетей, особенно в условиях растущей доли возобновляемых источников энергии.

Например, в Евросоюзе к 2023 году за действовала более 50 ГАЭС общей мощностью более 50 ГВт [5].

В Узбекистане имеется потенциал для строительства газовой электростанции. Системы ГАЭС могут быть реализованы в горных районах нашей республики и на базе существующих гидротехнических сооружений. Потребность в ГАЭС будет расти, особенно с ростом использования возобновляемых источников энергии, в частности солнечных и ветряных электростанций. ГАЭС позволяет покрывать вечерний спрос на электроэнергию и балансировать нагрузку системы [6].

Заключение

Гидроэлектростанции являются одной из самых эффективных и экологически чистых технологий хранения и распределения электроэнергии. Они играют важную роль в стабилизации энергетической системы, эффективном использовании энергии и интеграции возобновляемых источников энергии.

Развитие гидроаккумулирующих электростанций (ГАЭС) в Узбекистане открывает широкие перспективы для достижения энергетической независимости и обеспечения энергетической безопасности страны. Создание эффективных систем накопления энергии позволит Узбекистану значительно снизить зависимость от импорта электроэнергии и ископаемого топлива, а также лучше использовать внутренние возобновляемые ресурсы, такие как солнечная и ветровая энергия. Благодаря возможностям оперативного регулирования мощности и накопления избыточной энергии, ГАЭС смогут стабилизировать электроснабжение даже при высоких колебаниях генерации и потребления. Это повысит устойчивость национальной энергосистемы к внешним воздействиям и чрезвычайным ситуациям, укрепит экономическую стабильность и создаст основу для устойчивого энергетического развития в долгосрочной перспективе.

Узбекистан имеет потенциал для развития этой технологии, и ее внедрение должно стать одним из приоритетов государственной энергетической политики.

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ИСПОЛЬЗОВАНИЕ ИННОВАЦИОННЫХ МЕТОДОВ В ПРЕПОДАВАНИИ ИСТОРИИ: АНАЛИЗ И ВЫВОДЫ

Аннотация: *В статье рассматриваются современные инновационные методы преподавания истории в образовательных учреждениях, анализируется их эффективность и влияние на качество исторического образования. Особое внимание уделено цифровым технологиям, интерактивным платформам, методике проблемного и проектного обучения. На основе отечественного и зарубежного опыта сделаны выводы о перспективных направлениях в преподавании истории в XXI веке.*

Ключевые слова: *история, инновационные методы, цифровые технологии, проектное обучение, историческое мышление.*

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USING INNOVATIVE METHODS IN HISTORY TEACHING: ANALYSIS AND CONCLUSIONS

Abstract*: The article considers modern innovative methods of history teaching in educational institutions, analyzes their effectiveness and impact on the quality of history education. Special attention is paid to digital technologies, interactive platforms, problem and project-based learning methodology. On the basis of domestic and foreign experience conclusions are drawn about promising directions in teaching history in the XXI century.*

Key words*: history, innovative methods, digital technologies, project-based learning, historical thinking.*

История как учебная дисциплина играет важную роль в формировании гражданской идентичности, критического мышления и способности анализировать общественные процессы. Однако традиционные формы преподавания (лекции, пересказ параграфов, контрольные) всё чаще утрачивают эффективность в условиях цифровой эпохи. Новое поколение учащихся имеет высокую визуальную и цифровую культуру, поэтому требует новых подходов в обучении (Глухов, 2020). Инновационные методы

направлены на усиление мотивации, вовлеченности и формирование навыков самостоятельного анализа источников.

Инновации в образовании — это внедрение новых средств, методов и форм обучения, ориентированных на индивидуализацию и активную роль учащегося в образовательном процессе (Хуторской, 2020). В рамках исторического образования наиболее распространены следующие инновационные подходы:

- цифровизация учебного контента: виртуальные музеи, QR-квесты, видеоуроки, онлайн-архивы;
- проблемное обучение: анализ исторических кейсов, участие в дебатах и симуляциях;
- проектная деятельность: создание презентаций, исторических подкастов, онлайн-выставок;
- элементы геймификации: использование исторических игр, викторин, симуляторов (Wineburg, 2001).

Согласно исследованиям А. В. Лазарева (2019), интеграция цифровых инструментов повышает интерес учащихся к истории на 35–40%, особенно в подростковой аудитории.

Цифровая трансформация образования создала новые возможности в области преподавания истории. Современные образовательные платформы позволяют использовать визуальные и интерактивные форматы:

- Arzamas.academy — лекции и курсы по истории в формате видеолекций;
- ChronoZoom — интерактивная временная шкала для визуализации исторических процессов;
- TimeMaps — исторические карты с динамическими слоями;
- «История.РФ», «Мемориал», «РЭШ» — ресурсы с источниками и мультимедийными материалами.

Например:

Самаркандский государственный институт иностранных языков (СамГИИЯ): В 2020–2021 учебном году из 825 дисциплин 396 были успешно проведены в онлайн-режиме с использованием платформ Moodle и Zoom. Более 100 видеоуроков, созданных преподавателями, были использованы свыше 3500 студентами. Однако опросы выявили проблемы с доступом к интернету, особенно в сельской местности, что затрудняло участие в онлайн-обучении для некоторых студентов.

Международный Вестминстерский университет в Ташкенте (МВУТ): Опрос, проведённый в октябре 2020 года, показал, что у 70% студентов и 60% преподавателей были проблемы с интернет-соединением, а у 25% студентов и 7% преподавателей — перебои с электричеством. Эти факторы негативно влияли на качество онлайн-обучения.

В этой сфере есть некоторые проблемы и вызовы:

- **Инфраструктурные ограничения**: Недостаточное покрытие интернетом и перебои с электричеством, особенно в сельских

районах, остаются значительными препятствиями для эффективного онлайн-обучения.

- **Доступность оборудования**: Около 12–15% населения Узбекистана проживают в бедности, что ограничивает их возможности приобретения необходимого оборудования для участия в онлайн-обучении.

Хотя в Узбекистане предпринимаются значительные шаги по внедрению цифровых образовательных технологий, систематические исследования, оценивающие влияние интерактивных ресурсов на вовлечённость студентов, пока ограничены. Для получения объективных данных и формирования эффективных стратегий развития образования необходимо проведение национальных исследований с участием преподавателей и студентов различных учебных заведений.

Методика проектного и проблемного обучения

Метод проектного обучения позволяет учащимся самостоятельно погружаться в историческую тему, формировать исследовательские навыки и критическое мышление

Примеры эффективных проектов:

- «История моей семьи в XX веке» — архивные исследования, интервью, создание генеалогического древа;
- «Виртуальный музей Великой Отечественной войны» — создание цифровых экспозиций;
- «Исторический подкаст» — запись и монтаж выпусков на тему эпох и событий.

Проблемное обучение вовлекает учащихся в анализ неоднозначных исторических ситуаций. Метод кейсов, ролевых игр и симуляций помогает формировать навыки анализа, аргументации и принятия решений.

Зарубежный опыт

В Финляндии, Канаде и Великобритании активно применяются методы исторического моделирования, цифрового сторителлинга и индивидуальных исследовательских маршрутов. Например, в финских школах используются мобильные приложения для исторических экскурсий по городу, дополненные виртуальной и дополненной реальностью.

Например:

- В США используется метод «Reacting to the Past», основанный на ролевых играх и симуляциях, позволяющих глубоко вжиться в эпоху и понять мотивации исторических деятелей (Carnes, 2014).
- В Финляндии: использование AR/VR-приложений для исторических экскурсий;
- В Канаде: формирование индивидуальных исследовательских маршрутов;
- В США: методика Reacting to the Past — студенты играют роли исторических персонажей, вживаясь в эпоху (Carnes, 2014).

Выводы и рекомендации

Использование инновационных методов в преподавании истории:

- способствует развитию исследовательских и аналитических навыков;
- стимулирует интерес к предмету;
- формирует навыки самостоятельной работы и критического мышления.

Рекомендуется:

- интеграция цифровых и проектных методик в школьные и вузовские курсы;
- организация курсов повышения квалификации для преподавателей;
- использование междисциплинарного подхода (история + ИКТ, история + искусство и культура).

История XXI века требует не только знаний фактов, но и умения понимать контекст, анализировать источники и выстраивать причинно-следственные связи. Инновационные методы преподавания открывают для этого широкие перспективы.

Основные требования и направления реформ

Формирование критического и системного мышления. Согласно Концепции развития системы высшего образования Республики Узбекистан до 2030 года, одним из приоритетов является развитие у студентов навыков критического и творческого мышления, системного анализа и способности к самостоятельному обучению. Это предполагает пересмотр учебных программ с акцентом на практические навыки и аналитические способности.

Внедрение современных педагогических технологий

В образовательный процесс активно интегрируются инновационные методы обучения, такие как дистанционное обучение, смешанное обучение (blended learning) и перевёрнутый класс (flipped classroom). Это способствует индивидуализации обучения и развитию самостоятельности у студентов.

Повышение квалификации педагогических кадров

Особое внимание уделяется подготовке педагогов, способных применять современные методы обучения и информационно-коммуникационные технологии. Создаются условия для непрерывного профессионального развития учителей, включая стажировки и обучение по инновационным методикам.

Развитие цифровой образовательной инфраструктуры

Внедряются электронные платформы и ресурсы, такие как электронные библиотеки и системы дистанционного обучения, что расширяет доступ студентов к образовательным материалам и способствует развитию навыков работы с информацией.

Заключение

Узбекистан стремится модернизировать систему образования, делая акцент на развитие у студентов навыков критического мышления, анализа источников и понимания контекста. Внедрение инновационных методов преподавания и повышение квалификации педагогов являются ключевыми элементами этих реформ, направленных на подготовку специалистов, способных эффективно действовать в условиях современного мира.

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ГЕРМЕТИЗАЦИЯ ФИССУР В ПРОФИЛАКТИКЕ ОККЛЮЗИОННОГО КАРИЕСА

Аннотация:*В современном мире по-прежнему существует проблема кариеса зубов. Кариес зубов по-прежнему остается наиболее распространенным хроническим заболеванием детского возраста и основной причиной потери зубов. За последние 30 лет достигнут значительный прогресс в профилактике кариеса зубов у детей и подростков. В то время как кариес уменьшился на интерпроксимальных поверхностях, кариес окклюзионной ямки и фиссур увеличился [2,8]. В целом исследования показали, что кариес жевательной и щечной/язычной поверхностей составляет почти 90% кариеса у детей и подростков [5,7]. Кариесный процесс первого и второго моляров обычно начинается вскоре после прорезывания.*

Ключевые слова*: герметизация фиссур, окклюзионного кариеса*

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FISSURE SEALING IN THE PREVENTION OF OCCLUSAL CARIES

Annotation:*Dental caries is still a problem in today's world. Dental caries remains the most common chronic disease of childhood and the leading cause of tooth loss. Significant progress has been made over the past 30 years in the prevention of dental caries in children and adolescents. While caries has decreased on the interproximal surfaces, caries of the occlusal fossa and fissures has increased [2,8]. Overall, studies have shown that caries of the masticatory and cheek/tongue surfaces accounts for almost 90% of caries in children and adolescents [5,6,7]. Caries of the first and second molars usually begins soon after eruption.*

Key words: *Fissure sealing, occlusal caries*

Введение: Доказано что, окклюзионные поверхности боковых зубов, особенно моляров, имеют сложную морфологию с множеством бороздок (фиссур) и ямок на жевательной поверхности, а также на щечной и небной

поверхностях . Эти коренные зубы считаются наиболее восприимчивыми к кариесу зубами из-за анатомии жевательных поверхностей этих зубов, которая, к сожалению, препятствует защите от слюны и фтора и вместо этого способствует накоплению зубного налета [3]. Ямки и трещины не вызывают кариесный процесс. Они позволяют микроорганизмам и пище проникать в этот защищенный теплый влажный инкубатор, и можно ожидать, что здесь образуется зубной налет (рис.2). Вместо этого они обеспечивают убежище тем агентам, которые вызывают кариес. Когда углеводы в пище вступают в контакт с зубным налетом, ацидогенные бактерии в зубном налете создают кислоту. Эта кислота повреждает стенки эмали ямок и трещин и приводит к кариесу. Поэтому больше всего кариеса сосредоточено на окклюзионных поверхностях жевательных моляров[1,4].

Цель: Усовершенствовать герметизация фиссур в профилактике окклюзионного кариеса.

Материал и методы исследования: Обследовано Данное исследование было проведено стоматологической клиники «Denta» города Андижан. Все больные находились на лечение в период с 2020г. декабря месяца по декабрь 2021 г. Нами были исследованы 45 пациентов, у которых существовала проблема кариеса.

Результаты: Установлено, Оценка эффективности герметиков показала, что редукция прироста кариеса зубов зависит от ретенции герметиков на окклюзионных поверхностях зубов, способности выделять ионы фтора в ткани зуба и ротовую жидкость, а эффективность профилактики кариеса постоянных зубов значительно возрастает при сочетании герметизации фиссур и ямок с местной фторид профилактикой и гигиеной полости рта. В большинстве случаев форма ямки или фиссуры такова, что ее невозможно очистить, что объясняет высокую подверженность ямок и фиссур кариесу. Кариес в ямках и трещинахследует направлению эмалевых стержней и обычно образует треугольное или конусообразное поражение с вершиной на наружной поверхности и основанием в направлении DEJ. Ямки и трещины создают больше полостей, чем кариес на гладкой поверхности. Профилактические меры против кариеса включают ежедневную чистку зубов, местное применение фторидов, жевательные резинки с ксилитом и герметизацию фиссур, которые применяют стоматологи. В последние десятилетия было предпринято много усилий для предотвращения развития кариеса, в частности окклюзионного кариеса, поскольку когда-то считалось общепризнанным, что ямки и фиссуры зубов заражаются бактериями в течение 10 лет после прорезывания зубов в ротовой полости. Г.В. Блэк, создатель современной стоматологии, сообщал, что более 40% случаев кариеса постоянных зубов возникают в ямках и фиссурах из-за способности удерживать пищу и зубной налет. Было много попыток предотвратить окклюзионный кариес. Научные исследования доказали, что правильно проведенная процедура на 100% эффективна в

защите поверхностей зуба от кариеса, поскольку служит физическим барьером возможногот разрушения. Эффективность действия процедуры приостанавливается или прекращается, когда разрушаются склеивающие вещества между пленкой и зубом, или теряется их часть. Однако зубы, которые запечатывались, в дальнейшем значительно меньше подвержены образованию кариеса, чем те, что никогда не обрабатывались. Запечатывание эффективно в течение 5 лет, но может сохранять свои свойства на срок до 10 лет. Отчеты врачей показывают, что спустя 7 лет после запечатывания около 49% зубов остаются полностью запечатанными. Но запечатывание не должно рассматриваться в качестве постоянной процедуры. Необходимы регулярные посещения стоматолога для профилактического осмотра, что позволит контролировать состояние запечатанных зубов.

Заключение: Таким образом герметик для фиссур представляет собой материал, который помещают в ямки и фиссуры зубов, чтобы предотвратить или остановить развитие кариеса. Поскольку целостность и удержание герметика имеют решающее значение для успеха герметиков в долгосрочной перспективе, материал на основе смолы является предпочтительным. Герметизация начальных кариозныхт поражений одновременно эффективна и практична — стоматологам следует рекомендовать использовать герметики в большей степени в превентивных целях, а не в профилактических или оперативных целях. также к поверхностям, где статус кариеса неясен. Прогрессирование некавитированных окклюзионных поражений было медленным и для поверхностей, которые не были запломбированы, что указывает на то, что такие поверхности можно было либо контролировать, либо запломбировать

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СТРАТЕГИЧЕСКОЕ ПЛАНИРОВАНИЕ И УПРАВЛЕНИЕ ЧЕЛОВЕЧЕСКИМИ РЕСУРСАМИ

Аннотация: *Благодаря органичному сочетанию инженерных технологий и науки управления можно реализовать наилучшее сочетание ресурсов предприятия и получить долгосрочные выгоды. Хотя история развития, исследовательские цели и теоретические методы этих двух дисциплин существуют как независимые и направлены на решение проблем теории относительности в разных областях, они тесно сотрудничали на протяжении всей своей истории. В этом разделе приводится историческая справка об этой взаимосвязи и в то же время обсуждается совершенствование моделей управления человеческими ресурсами, основанных на современной экономике знаний и современной промышленной инженерной среде, что имеет положительное академическое значение.*

Ключевые слова: *Человеческие ресурсы; модель управления; предприятие*

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STRATEGIC PLANNING AND HUMAN RESOURCE MANAGEMENT

Summary:*Thanks to the organic combination of engineering technologies and management science, it is possible to realize the best combination of enterprise resources and obtain long-term benefits. Although the history of development, research goals, and theoretical methods of these two disciplines exist as independent ones and are aimed at solving problems of relativity theory in different fields, they have worked closely together throughout their history. This section provides a historical background on this relationship and at the same time discusses the improvement of human resource management models., based on the modern knowledge economy and modern industrial engineering environment, which has a positive academic significance.*

Keywords*: Human resources; management model; enterprise*

С самого начала производственной деятельности человека всегда существовала и развивалась практика управления. Новые достижения менеджмента на любом этапе не только тесно связаны с общей средой и состоянием общества, но и являются результатом использования достижений современного научного и культурного развития. Именно таким образом менеджмент прошел путь развития от экстенсивного к утонченному, от неупорядоченного к упорядоченному, от унитарного к систематическому и от инструментальной рациональности к гуманистической рациональности. Являясь двумя основными направлениями исследований в области практики и теории менеджмента, промышленный инжиниринг и управление человеческими ресурсами всегда были взаимосвязаны. Практическая деятельность этих двух направлений имеет долгую историю, но теории, ставшие научными, являются продуктом современной промышленной революции, и поэтому каждое изменение на разных этапах развития является важным. движимый развитием науки и техники и социальным прогрессом, этот процесс всегда протекал в гармонии. Каждый этап промышленного инжиниринга и управления человеческими ресурсами имеет отличительные черты времени. Точнее, управление человеческими ресурсами и развитие промышленного инжиниринга тесно связаны, питают и дополняют друг друга[81].

1. Проблемы стратегического планирования человеческих ресурсов

Магистр менеджмента Питер Друкер сказал, что “управление предприятием - это не что иное, как управление человеческими ресурсами”, и ключевая позиция управления человеческими ресурсами в современном управлении предприятием неоспорима. Хотя руководители высшего звена прошли современные курсы повышения квалификации по управлению человеческими ресурсами в рамках корпоративного обучения, хотя они признают важность управления человеческими ресурсами, и хотя руководители отделов также признают, что разрыв в знаниях и квалификации сотрудников отделов серьезно ограничивает выполнение и качество рабочих задач и даже ограничивает развитие персонала. предприятия, но на практике позиционирование системы управления человеческими ресурсами все еще остается на традиционном этапе административного управления персоналом. В процессе собеседования менеджеры среднего звена не испытывали недостатка в внимании к человеческим ресурсам, но все они чувствовали, что не могут начать или выразили свою неспособность трансформировать эти передовые идеи управления человеческими ресурсами в систему, подходящую для работы компании. Основная причина этой проблемы заключается в том, что компания не повысила уровень управления человеческими ресурсами до стратегического, систематического и решительного, во-вторых, в том, что построение функциональных отделов

[81] Хуан Синь, об управлении человеческими ресурсами предприятий [J].Журнал Хунаньского колледжа кадров экономического менеджмента, 2004.

управления человеческими ресурсами является очень слабым, а в-третьих, в том, что она не изучила основные возможности для повышения конкурентоспособности компании. предприятия и руководить долгосрочным развитием системы управления человеческими ресурсами[82].

2.Стратегические цели компании неясны, и соответствующее стратегическое планирование человеческих ресурсов не может быть осуществлено

Предприятия были “спекулятивными” с момента своего создания. Поэтому при быстром изменении внешних факторов, таких как рыночные возможности, смена партнеров, продуктов и технологических тенденций, компании постоянно меняют свое позиционирование, и даже многие компании “приобрели фундаментальные стратегии”. Особенно на стадии быстрого расширения, они часто вовлечены в различные сферы бизнеса, многие из которых являются развивающимися отраслями. Однако эти развивающиеся отрасли не имеют достаточного опыта в области исследований и разработок, маркетинга, менеджмента, обслуживания и других аспектов, на которых можно было бы учиться, особенно в случае некоторых недавно разработанных проектов, когда работа с фиксированной почтой и сборкой данных не столь развита, как в традиционных компаниях. Поэтому у предприятий, как правило, отсутствует четкая корпоративная стратегия развития, а о стратегическом планировании человеческих ресурсов говорить невозможно.

3.Текущее состояние кадрового потенциала предприятия не может соответствовать потребностям стратегии развития предприятия

В настоящее время большинство наших предприятий являются трудоемкими, которые поглощают большое количество трудовых ресурсов. Со статической точки зрения, количество трудовых ресурсов велико, но качество нуждается в срочном улучшении. Однако в механизме найма на работу на предприятиях существует феномен “кумовства”. Что касается руководства, особенно основных сотрудников, то большинство из них происходит из частных социальных сетей предпринимателей, что, в свою очередь, динамично приводит к общему притоку изначально принадлежащих талантливых ресурсов. Нехватка кадровых ресурсов приводит к тому, что компании обычно отбирают и нанимают таланты, исходя из временных потребностей, связанных с возможностями и рынками, вместо того, чтобы уделять внимание потребностям талантов и организаций в долгосрочной стратегии развития компании. В настоящее время культурный уровень сотрудников на некоторых предприятиях нашей страны находится на низком уровне, а также ощущается нехватка технического и управленческого персонала. Согласно статистике, на каждые 100 работников крупных предприятий в стране приходится 10,46 человека с высшим образованием или

[82] Хуан Синь, об управлении человеческими ресурсами предприятий [J].Журнал Хунаньского колледжа кадров экономического менеджмента, 2004.

выше, а на предприятиях - всего 2,96 человека, что эквивалентно лишь 28% от среднего уровня по крупным предприятиям.

4.На многих предприятиях положение отдела кадров невысоко, и его часто одновременно занимают другие отделы.

Стратегическая корректировка различных этапов развития предприятия

Поскольку внутренняя и внешняя среда, в которой находится предприятие, постоянно меняется, стратегические изменения и стратегическая корректировка предприятия стали неизбежными. Таким образом, стратегическое планирование человеческих ресурсов должно быть способно своевременно реагировать на изменения в корпоративной стратегии.

Начальный период эксплуатации. В настоящее время корпоративная организация должна сформулировать централизованную стратегию, а планирование человеческих ресурсов должно быть сосредоточено на отборе, обучении, использовании и мотивации профессиональных бизнес-талантов, чтобы создать разумную команду сотрудников для бесперебойной работы и роста организации. Как основатель предприятия, он должен начать уделять внимание формированию корпоративной философии, стратегических целей и корпоративной культуры. Это золотой период формирования корпоративных ценностей и важная работа по планированию человеческих ресурсов. Можно сказать, что на ранних этапах развития Lenovo стремительное развитие компании, вызванное смелыми назначениями генералов-тигров Ян Юаньцина, Го Вэя и Сунь Хунбиня, а также “движением за создание бога” Ни Гуаннаня, стало ярким тому подтверждением.

Период роста. Компании, находящиеся на стадии роста, начинают рассматривать диверсифицированные бизнес-стратегии, пробуют стратегии снижения затрат или стратегии дифференциации, и эти стратегии означают, что адаптированное к ним планирование человеческих ресурсов имеет иную направленность. В этот период в центре внимания корпоративной стратегии находятся как расширение организации, так и упорядоченное управление. Поэтому при планировании кадровой политики следует сместить акцент с чрезмерного внимания к предпринимательству и личному героизму на стандартизированное и профессиональное управление. Например, на этапе предпринимательства компания Vanke при подборе и приеме на работу сотрудников в основном полагается на отличное личное суждение и интуицию руководителей Wang Shi и Vanke.С быстрым развитием Vanke этот метод больше не может удовлетворять потребности предприятий в распределении человеческих ресурсов. Поэтому Vanke своевременно выдвинула профессиональные и уточненные стратегические требования в своем собственном плане развития человеческих ресурсов, а также внедрила специальный инструмент профессионального управления - “Квалификационную модель талантов”, и постепенно развила его в серию квалификационных моделей, включая “Общую квалификационную модель Vanke”, “Квалификационную модель лидерства Vanke".”, а также “продажи”,

“Дизайн”, “Инжиниринг”, “обслуживание клиентов” и другие шесть специальностей. Именно благодаря такому активному подходу Vanke не только удовлетворяет потребности в талантах для развития своих собственных предприятий, но и экспортирует множество выдающихся талантов в другие компании, занимающиеся недвижимостью. Таким образом, Vanke также имеет репутацию “Военной академии Вампоа в сфере недвижимости”..

Срок погашения. На стадии зрелости наиболее реальным способом получения предприятием постоянного конкурентного преимущества является создание собственных основных производственных мощностей. Стратегия агрегирования очень эффективна для предприятий, и в случае неопределенности внешней среды стратегия дифференциации, безусловно, станет неизбежным выбором для предприятий. Поэтому подготовка тех профессиональных талантов, которые могут помочь предприятиям еще больше повысить уровень управления человеческими ресурсами, а также тех, кто может оценить ситуацию, отреагировать на открывающуюся возможность и сформулировать долгосрочную стратегию развития предприятия, стала главной стратегической целью планирования человеческих ресурсов на данном этапе.

С точки зрения повышения уровня управления человеческими ресурсами, предприятиям необходимо уделять внимание соответствию личностей, интересов, качеств и структуры различных типов сотрудников организационным стратегиям и организационным позициям в их собственных планах развития человеческих ресурсов; уделять внимание укреплению коммуникации и обучению сотрудников, уделяя особое внимание нормативные и последовательные модели мышления и поведения сотрудников; уделять внимание формированию сильной корпоративной культуры, укреплению организованности сотрудников и повышению общей боеспособности, тем самым способствуя постоянному росту организации[83].

Период рецессии. Что необходимо, так это избавиться от бремени истории и вдохнуть в предприятие больше новой жизненной силы, чтобы добиться его “возрождения”. В этот период в центре внимания корпоративной стратегии стала корректировка стратегического направления. В этой ситуации повышение квалификации специалистов стало важной частью планирования людских ресурсов.

Продолжать продвигать реформу управления человеческими ресурсами и совершенствовать систему управления человеческими ресурсами, главным образом для устранения недостатков в управлении человеческими ресурсами предприятия и создания благоприятных условий для разработки и осуществления планирования людских ресурсов. Планирование человеческих ресурсов предприятия должно предусматривать

[83] Шао Янь.Обсуждение вопросов планирования человеческих ресурсов на современных предприятиях [J].Журнал колледжа Чифэн, выпуск 06, 2009.

отказ от старой модели управления человеческими ресурсами или даже создание новой модели. Этот процесс представляет собой процесс кардинальных изменений в управлении человеческими ресурсами. Наряду с корректировкой интересов и сохранением оригинальных привычек, инновации в управлении человеческими ресурсами часто встречают огромное сопротивление со всех сторон. Однако только путем внедрения эффективных изменений можно создать хорошо функционирующую платформу поддержки планирования кадровых ресурсов предприятия. Идеальная платформа поддержки планирования человеческих ресурсов, в дополнение к анализу работы, определению должностных обязанностей, управлению эффективностью, механизму стимулирования, планированию карьеры и другой работе функциональных подразделений, некоторые из которых даже выходят за рамки управления человеческими ресурсами, такие как система планирования и управления бюджетом, корпоративная система управления целями и т.д.

Американский ученый в области менеджмента Джеймс? Си Коллинз однажды выдвинул основной принцип Evergreen Foundation в книге “Evergreen Foundation”: “Делать часы” вместо того, чтобы "показывать время". Стратегическое планирование человеческих ресурсов также должно основываться на “изготовлении часов”, а не на “определении времени”.

“Создание часов" означает создание механизма управления отбором, развитием, ростом и обновлением человеческих ресурсов. Как утверждает компания Lenovo в своей книге “Теория ожерелья”, упомянутой в разделе "Развитие человеческих ресурсов", суть конкурса талантов заключается не в том, чтобы выкупить самые крупные и лучшие бусины, а в том, чтобы сначала разработать собственную линию, создать совершенный механизм управления и соединить жемчужины в красивое ожерелье. Без этой лески, какими бы крупными ни были бусины, они все равно будут разбросаны. Без хорошего механизма управления человеческими ресурсами, позволяющего сформировать прочную корпоративную сплоченность, может быть трудно удержать таланты, полагаясь только на высокие зарплаты.

Формирование и успешное применение механизма ”часового механизма" также заключается в создании комплекса институциональных систем, включающих общую политику, конкретные системы и ряд вспомогательных мер. Типичным примером является механизм развития талантов “скачки - это не лошадь”, пропагандируемый Haier и продвигаемый Lenovo и другими компаниями. Этот механизм считает, что на предприятии нет недостатка в талантах, и главное - в полной мере раскрыть лучшие качества и потенциал каждого. Для того чтобы в полной мере развить лучшие качества и потенциал каждого человека, необходимо “превратить лошадь в замаскированную лошадиную скачку” и создать механизм конкурса талантов, основанный на рыночной экономике.

Усиление подготовки специалистов по управлению человеческими ресурсами предприятия является важным способом устранения кризиса в

области планирования человеческих ресурсов. Высокая конкуренция во внешней среде усложняет разработку плана управления человеческими ресурсами предприятия, что требует от разработчиков стратегического планирования управления человеческими ресурсами предприятия стратегического мышления и практического опыта. Таким образом, усиление подготовки высококвалифицированных специалистов по управлению человеческими ресурсами предприятия и повышение их общего профессионального уровня стало ключом к успеху или неудаче планирования человеческих ресурсов. Для того чтобы повысить качество работы менеджеров по персоналу компании и удовлетворить потребности развития компании, обучение менеджеров очень достойно внимания. Учебный план должен включать политику в области обучения, требования к обучению, содержание обучения, формы обучения, оценку обучения и т.д.

Благодаря анализу и осмыслению того, как предприятия внедряют стратегическое планирование человеческих ресурсов, стратегическое планирование человеческих ресурсов требует, чтобы субъект планирования человеческих ресурсов стоял на высоте стратегии во всех аспектах процесса планирования человеческих ресурсов, полностью изучал состояние собственных ресурсов организации и внешнюю среду организации, и сформулировать список будущих потребностей организации в человеческих ресурсах и соответствующие планы обеспечения человеческими ресурсами в соответствии с видением организации, организационными целями и стратегическим планированием, чтобы поддержать осуществление стратегического планирования и способствовать реализации видения организации и организационных целей.

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СТРАТЕГИЧЕСКОЕ УПРАВЛЕНИЕ ЧЕЛОВЕЧЕСКИМИ РЕСУРСАМИ

Аннотация: *С всесторонним развитием социальной экономики управление человеческими ресурсами внедряется различными типами компаний. Благодаря созданию научного и совершенного механизма управления человеческими ресурсами, это может не только эффективно повысить личную эффективность сотрудников, но и одновременно повысить эффективность работы организации и основную конкурентоспособность предприятия, ускорьте темпы развития предприятия, чтобы оно могло получать большие экономические выгоды.*

Ключевые слова: *Управление человеческими ресурсами; корпоративные показатели эффективности*

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STRATEGIC HUMAN RESOURCE MANAGEMENT

Summary: *With the comprehensive development of the social economy, human resource management is being implemented by various types of companies. Through the creation of a scientific and perfect human resource management mechanism, it can not only effectively improve the personal effectiveness of employees, but also simultaneously improve the organization's work efficiency and the basic competitiveness of the enterprise, accelerate the pace of development of the enterprise so that it can receive greater economic benefits.*

Keywords*: Human resource management; corporate performance indicators*

1 Стратегическое управление человеческими ресурсами

Проще говоря, стратегическое управление человеческими ресурсами заключается в систематическом налаживании связей между людьми и предприятиями. Она рассматривает человеческие ресурсы как своего рода основной ресурс для получения конкурентного преимущества и подчеркивает, что с помощью планирования человеческих ресурсов, политики и конкретных практик она может получить конкурентное преимущество в распределении человеческих ресурсов, которое может быть

согласовано по вертикали с корпоративной стратегией и может быть согласовано на уровне внутренней деятельности предприятия и подчеркивает, что вся кадровая деятельность направлена на достижение корпоративных целей. Стратегическое управление человеческими ресурсами делает акцент на деловой активности предприятия. В соответствии со стратегическими целями компании, стратегическое планирование человеческих ресурсов на предприятии, в частности, современные научные и технологические средства, разумная организация и использование обучения, координация человеческих ресурсов и соответствующие стратегические цели человеческих ресурсов, руководство, регулирование психология и поведение, контроль и надзор, чтобы обеспечить соотношение материальных и человеческих ресурсов в наилучших условиях, повысить энтузиазм сотрудников, чтобы обеспечить реализацию стратегических целей и устойчивое развитие деловой деятельности. С течением времени и прогрессом науки и техники роль стратегического управления человеческими ресурсами в производстве и эксплуатации предприятия становится все более важной. Многие исследования показали, что стратегическое управление человеческими ресурсами может влиять на эффективность деятельности предприятия. Взаимосвязь между стратегическим управлением человеческими ресурсами и эффективностью деятельности предприятия можно объяснить следующими двумя моментами[84].

2. Как эффективно играть роль стратегического управления человеческими ресурсами в развитии предприятия

Стратегические человеческие ресурсы предприятия являются движущей силой всей деловой деятельности предприятия. Только обновляя традиционные концепции управления, стандартизируя управление человеческими ресурсами и повышая их эффективность, предприятие может выжить в условиях жесткой рыночной конкуренции и обеспечить устойчивое развитие предприятия.

Для достижения стратегических целей предприятия предприятие должно разработать систему поощрений и наказаний, сформулировать кодекс поведения и оценить меры целенаправленным и надлежащим образом в соответствии с личными потребностями своих сотрудников, чтобы оптимизировать распределение человеческих ресурсов таким образом, чтобы личные интересы были соблюдены. действия сотрудников соответствуют интересам предприятия и стимулируют субъективную инициативу сотрудников. Для стимулирования персонала, добивающегося более высоких результатов, могут быть приняты определенные средства и меры, такие как повышение производительности. Некоторые относительно слабые сотрудники должны пройти обучение и получить помощь, чтобы как можно скорее добиться прогресса, а те, кто нарушает дисциплину и постоянно не

[84] Ду Ян, Сюй Пэнфэй., Как предприятия могут осуществлять эффективное управление человеческими ресурсами [J].Электромеханическая информация, 2008.

проходит перевоспитание, должны быть наказаны. Стимулируйте энтузиазм сотрудников с помощью разумных и научных методов, поддерживайте баланс между институционализацией и гуманизацией управления, обеспечивайте упорядоченное и эффективное управление и одновременно реализуйте личные интересы сотрудников и стратегические цели предприятия.

Необходимо улучшить планирование человеческих ресурсов и разработать вспомогательную политику, чтобы иметь возможность своевременно и результативно корректировать кадровые позиции и распределять человеческие ресурсы, эффективно развивать и использовать внутренние человеческие ресурсы предприятия и повышать эффективность существующих человеческих ресурсов. Стоит отметить, что при проведении кадрового планирования следует в полной мере учитывать влияние ключевых факторов, таких как изменения в рабочей силе, корпоративной культурной атмосфере, экономических показателях и текущей ситуации с корпоративными кадровыми ресурсами, всесторонне анализировать и фокусироваться на понимании, чтобы обеспечить рациональность и научность его планирования и политики[85].

Мы должны обращать внимание на таланты и иметь концепцию сохранения талантов. Таланты - это ценное богатство предприятия. Ключевые таланты — это ядро и представитель предприятия, душа и хребет предприятия. Бизнес-менеджеры должны ценить таланты и не должны завидовать талантам. Даже если сам менеджер обладает незаурядным талантом, если под его началом нет нескольких талантливых генералов и большого количества различных опор, трудно добиться больших достижений.

Стратегическое управление человеческими ресурсами впервые зародилось в западных странах. В связи с непрерывным развитием экономики оно было внедрено в управление отечественными предприятиями только в последние годы. Как только предприятие внедряет систему стратегического управления человеческими ресурсами, оно должно создать комплексную и совершенную систему управления, которая должна включать подбор персонала, обучение, компенсацию и оценку, чтобы мотивировать энтузиазм сотрудников и увлеченность работой, а также создать эффективную производственную и операционную среду для предприятия.

Основной задачей управления человеческими ресурсами является создание и совершенствование разумного и эффективного механизма стимулирования. Мотивация является важной частью управления человеческими ресурсами, и ее влияние напрямую влияет на уровень эффективности производства и степень развития персонала. Благодаря строгому и эффективному механизму развития талантов можно привлекать подходящие таланты и стимулировать энтузиазм, креативность и изобретательность сотрудников.

[85] Инь Янькэ, Сунь тявкает.Развитие предпринимательства в Китае и планирование людских ресурсов [J].Современные менеджеры (последнее издание), выпуск 03, 2006.

Механизм стимулирования включает в себя следующее :

Во-первых, создайте разумный механизм стимулирования заработной платы. Различные ценности и способности работников должны в определенной степени отражаться на доходах работников. При планировании карьеры в некоторых компаниях еще не сформирован разумный и эффективный механизм стимулирования. В этом случае будет затронут энтузиазм работников. Только стандарты оценки различных должностей и различных сотрудников могут помочь усовершенствовать механизм оплаты труда, такой как заработная плата, бонусы и льготы, и мобилизовать энтузиазм сотрудников.

Второе - создать механизм стимулирования труда. Чтобы мобилизовать потенциальный энтузиазм сотрудников, при распределении должностей следует учитывать факторы, соответствующие уровню профессиональных знаний сотрудников, профессиональным навыкам, личным увлечениям, планированию карьеры, личностным особенностям и т.д., уделять внимание развитию условий труда сотрудников и в полной мере раскрывать их таланты. На значительной части трудоемких предприятий нашей страны из-за низкого технического уровня работы, узкой направленности и высокой повторяемости особенно легко вызвать скуку и однообразие работы, что оказывает определенное влияние на эффективность производства. Если разумно организовать регулярную смену процессов, чтобы производственные операции сотрудников сохраняли ощущение свежести, это может позволить им реализовать свои потенциальные способности на работе.

В-третьих, необходимо развивать механизм эмоционального стимулирования. Эффективность управления может быть достигнута за счет эффективной двусторонней коммуникации, и тогда сотрудников можно поощрять к проявлению энтузиазма, уделяя внимание внутреннему миру сотрудников. Формирование эмоций имеет ряд тенденций и стабильностей. Передача этих эмоций может особенно эффективно устранить негативное отношение сотрудников к работе.

На самом деле уровень культурной грамотности сотрудников на некоторых предприятиях относительно низок. Для того чтобы повысить качество персонала и создать первоклассную рабочую силу, необходимо повысить уровень развития человеческих ресурсов, повысить качество персонала и реализовать цель создания предприятия с сильными кадрами. Усиливая обучение сотрудников, это поможет повысить коэффициент использования человеческих ресурсов предприятий. Рационально и эффективно развивайте человеческие ресурсы, преобразуйте человеческие ресурсы в человеческий капитал, максимально повышайте эффективность человеческих ресурсов и максимально расширяйте потенциал предприятия, тем самым способствуя общему повышению качества человеческих ресурсов, повышению конкурентоспособности предприятия и способствуя

совершенствованию предприятия это промышленные преимущества и научно-технические преимущества[86].

Для того чтобы действительно обеспечить эффективное обучение сотрудников предприятий, необходимо повысить их значимость и проводить обучение по различным каналам, формам и уровням. Эффективно интегрируйте обучение талантливых специалистов со стратегиями развития предприятия, чтобы обеспечить формализацию и институционализацию повседневной работы по обучению. Цикл обучения также должен быть надлежащим образом спланирован, и для достижения конкретных целей следует провести серию полных, неполных, любительских и недилетантских курсов повышения квалификации, а также ряд независимых школ, совместных тренингов с научно-исследовательскими институтами и других видов профессиональной подготовки для подготовки специалистов, остро необходимых предприятию.

Благодаря приведенному выше анализу стратегическое управление человеческими ресурсами может эффективно сочетать стратегические цели и миссии предприятия с результатами деятельности предприятия, а эффективная система управления человеческими ресурсами также может заложить основу для того, чтобы управление человеческими ресурсами стало стратегическим ресурсом. Только когда предприятие полностью осознает взаимосвязь связь между управлением человеческими ресурсами и эффективностью деятельности предприятия и тесная интеграция этих двух факторов могут способствовать развитию предприятия.

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КРАТКИЙ АНАЛИЗ СТРАТЕГИЧЕСКОГО УПРАВЛЕНИЯ ЧЕЛОВЕЧЕСКИМИ РЕСУРСАМИ

Аннотация: *В условиях глобализации экономики и постоянной жесткой конкуренции традиционное управление персоналом больше не может адаптироваться к требованиям ситуации, поэтому предприятия должны перестроить свою современную систему управления для достижения долгосрочного развития. Являясь новой моделью управления человеческими ресурсами, стратегическое управление человеческими ресурсами за последние годы добилось больших успехов в теории и практике и стало целью преобразований на многих предприятиях.*

Ключевые слова: *Стратегия; Управление человеческими ресурсами; Конкурентное преимущество; эффективность*

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A BRIEF ANALYSIS OF STRATEGIC HUMAN RESOURCE MANAGEMENT

Summary: *In the context of the globalized economy and constant fierce competition, traditional personnel management can no longer adapt to the requirements of the situation, so enterprises must rebuild their modern management system to achieve long-term development. Being a new model of human resource management, strategic human resource management has achieved great success in theory and practice in recent years and has become the goal of transformation in many enterprises.*

Keywords: *Strategy; Human resource management; Competitive advantage; Efficiency*

С развитием науки и техники и наступлением эры экономики знаний конкуренция предприятий все больше зависит от приобретения знаний и информации. Как носители знаний и информации, “люди” стали стратегическим ресурсом в процессе получения предприятием конкурентного преимущества. В этой ситуации все большее число предприятий берут на вооружение теорию стратегического управления человеческими ресурсами.

Стратегическое управление человеческими ресурсами заключается в систематической увязке управления человеческими ресурсами предприятия со стратегическими целями предприятия. Его суть заключается в повышении эффективности реализации стратегических целей предприятия посредством запланированных мероприятий по развитию человеческих ресурсов и управлению ими[87].

1. Развитие и эволюция теории стратегического управления человеческими ресурсами

1）Этап управления персоналом

В первой половине 20-го века под руководством научной теории менеджмента и теории организационного поведения, представленной Тайро, были сформированы основные основы современной теории управления персоналом. В этот период основное значение управления персоналом понимается Специализированное управление взаимоотношений людей и вещей в организации для выполнения задач организации, так что люди и вещи могут достичь лучший матч, и в то же время использование стимулов для повышения энтузиазма и инициативы сотрудников.На практике деятельность по управлению персоналом осуществляется через специализированные отделы по управлению персоналом и кадрами в соответствии с установленными процедурами.Как вспомогательная или кадровая функция, сфера его деятельности ограничивается административными вопросами, и он редко участвует в принятии стратегических решений на высоком уровне в организации.

2）Этап управления человеческими ресурсами

В 1950-х годах Питер Друкер предложил концепцию человеческих ресурсов и отметил, что “традиционное управление персоналом уходит в прошлое, и грядет новая кадровая революция, в центре внимания которой будет развитие человеческих ресурсов”.Позже Бейк, Майлз и другие провели обширные исследования по многим вопросам управления человеческими ресурсами, продвинув теорию и практику управления персоналом на совершенно новый этап развития — этап управления человеческими ресурсами. Теория управления человеческими ресурсами, во-первых, считает, что сотрудники являются “первым ресурсом” для достижения целей организации, и понимает “управление персоналом” в организации с точки зрения ресурсов; во-вторых, эта теория расширяет сферу применения управления человеческими ресурсами и считает, что управление человеческими ресурсами - это не только ответственность персонала. отдел кадров, но также несет важную ответственность за отдел кадров (производство, маркетинг) и участвует в разработке и реализации стратегических решений организации. В-третьих, увязывайте цели

[87] Сяо Лицзюань.Краткий анализ стратегического управления человеческими ресурсами [J].Наука, техника и экономика Внутренней Монголии, 2005, (4)

управления человеческими ресурсами с конкурентоспособностью организации, прибылью, живучестью, конкурентными преимуществами и гибкостью рабочей силы и т.д., не только уделяйте внимание разработке продуктов и услуг в области человеческих ресурсов, но и уделяйте больше внимания влиянию человеческих ресурсов на организацию и менеджеров, а также поставьте функции управления человеческими ресурсами и другие управленческие функции на одно и то же важное место.

3）Этап стратегического управления человеческими ресурсами

В 1981 году Деванна выдвинул концепцию стратегического управления человеческими ресурсами в статье "Управление человеческими ресурсами: стратегический взгляд". Публикация книги Бира и других авторов "Управление человеческим капиталом" в 1984 году ознаменовала переход от управления человеческими ресурсами к стратегическому управлению человеческими ресурсами. Стратегическое управление человеческими ресурсами - это управление человеческими ресурсами, которое систематически связывает людей и организации, сочетая в себе единство и адаптивность. Чтобы подчеркнуть стратегию управления человеческими ресурсами, люди все чаще используют стратегическое управление человеческими ресурсами вместо управления персоналом. Роль менеджеров по персоналу в организации постепенно трансформировалась в роль экспертов по управлению стратегическими деловыми партнерами, мотиваторов сотрудников, проводников перемен и даже координаторов обучения обучающейся организации[88].

2. Значение и характеристики стратегического управления человеческими ресурсами

Стратегическое управление человеческими ресурсами - это управление возможностями членов организации по созданию ценности. Знаменитый принцип ”20/80" говорит нам о том, что в организации есть особая группа. Их немного, но они обладают высокой способностью создавать ценность и могут приносить организации высокую прибыль. Эти люди обычно считаются высокоэффективными сотрудниками. Они находятся в центре внимания компании. развитие человеческих ресурсов организации и управление ими. Основное внимание в процессе развития человеческих ресурсов организации стало уделяться не всем сотрудникам, а в основном высокопроизводительным сотрудникам, то есть тем высокопроизводительным сотрудникам, которые создали наибольшую ценность для организации, и на которые приходится 80% инвестиций в отделе кадров для высокоэффективных сотрудников. Для предприятий первой задачей является выявление таких сотрудников и последующая поддержка их посредством разработки целенаправленной кадровой политики.

[88] Ван Цюлэй. Об основных концепциях современного управления человеческими ресурсами [J]. Журнал Китайской академии угольной экономики, 2002, 12 (4): 354-358

Стратегическое управление человеческими ресурсами - это управление цепочкой создания стоимости. Управление цепочкой создания стоимости - это органичная интеграция различных функций управления человеческими ресурсами. Стратегическое управление человеческими ресурсами делает акцент на взаимной координации и сотрудничестве между различными функциями управления человеческими ресурсами и формирует совершенную систему создания ценности из различных функций управления человеческими ресурсами, которая позволяет максимально эффективно использовать функции политики и систем управления человеческими ресурсами организации.

Стратегическое управление человеческими ресурсами подчеркивает вклад в стратегию организации. Вклад стратегического управления человеческими ресурсами в организационную стратегию в основном отражается в системном осмыслении организационной стратегии, сосредоточении внимания на потребностях на стратегическом уровне, то есть сверху донизу, сначала уточняются компетенции персонала, содержащиеся в организационной стратегии, и другие требования к компетенциям, которые влияют на эффективность организации, а затем на этой основе, посредством декомпозиции, компетенции, требуемые стратегией организации, органично сочетаются с основными функциями управления человеческими ресурсами для формирования стратегической системы управления человеческими ресурсами, поддерживающей реализацию стратегических целей организации.

В настоящее время управление человеческими ресурсами в Китае все еще находится на стадии изучения зарубежного опыта. Межкультурные различия заставляют китайское управление человеческими ресурсами усваивать и совершенствовать зарубежную теорию и опыт управления. Оно должно основываться на китайском рынке, национальной политике и нормативных актах и постоянно совершенствоваться. исследуйте, практикуйте и обобщайте[89].

Обновите концепцию. Стратегическое управление человеческими ресурсами подчеркивает, что человеческие ресурсы являются основным источником конкурентных преимуществ предприятий. В процессе управления человеческими ресурсами большинство предприятий в нашей стране находятся только на стадии управления персоналом или ограничиваются транзакционным этапом управления человеческими ресурсами. Предприятие не проводит различия между тем, какой персонал является стратегическим, а какой - нестратегическим, и полагается только на субъективное суждение отдельных лиц, принимающих решения, при определении бизнес-стратегии предприятия. Тогда самой важной задачей этих предприятий является обновление своих концепций и создание новой

[89] Чэнь Тяньсян.Управление человеческими ресурсами [М].Гуанчжоу: Издательство университета Сунь Ятсена, 2001

руководящей идеологии, чтобы можно было повысить эффективность работы предприятия.

Уделение внимания внутренней и внешней среде предприятия, проведение тщательного первоначального анализа и стратегическое управление человеческими ресурсами - это модель кадровой деятельности, которая позволяет предприятию достигать своих целей. Поэтому, прежде чем предприятие внедрит свою модель, оно должно сначала понять потребности предприятия и провести тщательный первоначальный анализ. Кроме того, Китай все еще находится в переходном экономическом периоде, и его внешняя среда

Неопределенность очень сильна. Поэтому при разработке и внедрении предприятия должны учитывать свою внешнюю среду и обращать внимание на эффективное сочетание внутренней и внешней среды предприятия.

Оцените потенциальные препятствия и подготовьте план действий. При внедрении стратегического управления человеческими ресурсами необходимо оценить потенциальные препятствия. Потому что эти препятствия связаны с безразличием, враждебностью (неприятием реформ) и отсутствием поддержки процедур или ресурсов. Затем компания должна решить, что делать, кто будет это делать и когда это можно будет завершить. Укажите методы действий с помощью оценки, такие как внесение изменений в первоначальный план, оказание поддержки процедурам, оказание дополнительной поддержки непосредственным руководителям, проведение интенсивных обменов и тренингов, а также привлечение дополнительных ресурсов. Чтобы накопить определенный опыт для реализации следующего стратегического подхода к управлению человеческими ресурсами.

Устойчивое развитие сотрудников. Сотрудники - это основной костяк предприятия. Только постоянно повышая качество работы сотрудников, они могут лучше выполнять свои рабочие задачи и повышать эффективность работы предприятия. Поэтому предприятия должны уделять внимание устойчивому развитию своих сотрудников и должны использовать обучение, переподготовку кадров и другие методы для своевременного повышения собственного качества, чтобы идти в ногу с потребностями руководителей предприятий.Убедитесь, что организация может привлечь сотрудников с хорошими навыками и высоким уровнем мотивации, чтобы получить постоянное конкурентное преимущество и сформировать стратегический потенциал организации.

Короче говоря, в условиях современной экономической глобализации и распространения знаний только компании со стратегическим видением могут добиться конкурентного преимущества за счет стратегического управления человеческими ресурсами в глобальном масштабе. Таким образом, понимание предпосылок, значения, роли и процесса внедрения стратегического управления человеческими ресурсами является необходимым условием для того, чтобы предприятия играли стратегическую роль. управление человеческими ресурсами.Исходя из этого, предприятия нашей страны

должны как можно скорее создать систему управления человеческими ресурсами, подходящую для их собственного развития, чтобы обеспечить и способствовать долгосрочному развитию предприятий в условиях более жесткой конкуренции в будущем.

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ИССЛЕДОВАНИЕ И АНАЛИЗ СТРАТЕГИИ УПРАВЛЕНИЯ ЧЕЛОВЕЧЕСКИМИ РЕСУРСАМИ

***Аннотация**: Как привлечь выдающиеся таланты, повысить эффективность работы персонала на предприятии и достичь стратегических целей - это вопрос, который каждый руководитель должен серьезно рассмотреть, поскольку основой управления предприятием является управление человеческими ресурсами.*
***Ключевые слова**: Стратегия; управление человеческими ресурсами*

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RESEARCH AND ANALYSIS OF HUMAN RESOURCE MANAGEMENT STRATEGY

***Summary:**How to attract outstanding talents, increase the efficiency of the staff at the enterprise and achieve strategic goals is a question that every manager should seriously consider, since the basis of enterprise management is human resource management.*
***Keywords:**Strategy; human resource management*

1. Обзор стратегического управления человеческими ресурсами

Когда общая стратегия предприятия ясна, наиболее важным фактором, определяющим, сможет ли оно работать в предложенном направлении, является управление человеческими ресурсами. Потому что человеческие ресурсы - это самая сложная системная структура в корпоративной системе, позволяющая координировать и контролировать каждый аспект бизнес-процесса. Таким образом, построение системы управления человеческими ресурсами предприятия, основанной на стратегии, является ключом к успешному развитию предприятия, а также необходимым условием для того,

чтобы управление человеческими ресурсами в полной мере выполняло свою роль[90].

С помощью методов планирования и управления человеческими ресурсами достигается цель распределения человеческих ресурсов для получения конкурентного преимущества, подчеркивается соответствие человеческих ресурсов стратегиям организации, гибкость стратегий организации реализуется с помощью мероприятий по управлению человеческими ресурсами, а целью мероприятий по управлению человеческими ресурсами является достижение целей организации. Стратегическое управление человеческими ресурсами выводит управление человеческими ресурсами на стратегический уровень, систематически связывает людей с организацией и обеспечивает сочетание единства и адаптивности управления человеческими ресурсами.

Стратегическая концепция управления человеческими ресурсами рассматривает человеческие ресурсы как ресурсы и считает, что человеческие ресурсы являются наиболее ценными из всех ресурсов.Считается, что развитие предприятия и развитие профессиональных способностей его сотрудников взаимозависимы. Предприятия поощряют сотрудников постоянно совершенствовать свои профессиональные способности, чтобы повысить основную конкурентоспособность предприятия, а чтобы обращать внимание на профессиональные способности людей, мы должны в первую очередь обращать внимание на самих людей, повышать их квалификацию. рабочая сила повышает конкурентоспособность предприятия за счет инвестиций в человеческий капитал. В то же время рабочая сила как элемент капитала участвует в распределении стоимости предприятия.

Стратегическое управление человеческими ресурсами считает, что развитие человеческих ресурсов может создать ценность для предприятий. Предприятия должны создавать сотрудникам справедливую среду, способствующую развитию ценности, предоставлять сотрудникам необходимые ресурсы и распределять обязанности между сотрудниками, получая соответствующие разрешения, чтобы гарантировать, что сотрудники выполняют свою работу в рамках полного разрешения., а также мобилизовать энтузиазм сотрудников посредством разработки научных и эффективных механизмов стимулирования и предоставлять соответствующие материальные и духовные стимулы на основе справедливой оценки способностей, поведенческих характеристик и результатов деятельности сотрудников, чтобы стимулировать сотрудников к созданию ценности для предприятия на основе осознания собственной значимости[91].

2. Новые функции отдела стратегического управления персоналом

[90] Ван Цюлэй. Об основных концепциях современного управления человеческими ресурсами [J]. Журнал Китайской академии угольной экономики, 2002, 12 (4): 354-358

[91] Ван Цюлэй. Об основных концепциях современного управления человеческими ресурсами [J]. Журнал Китайской академии угольной экономики, 2002, 12 (4): 354-358

В организации с динамичным стратегическим управлением роль управления человеческими ресурсами была расширена с традиционных административных и оперативных функций на стратегические. Работа отдела кадров интегрирована в стратегию, операционную деятельность и другие процессы компании и предполагает новые обязанности. Это новое распределение ролей позволяет отделу кадров укомплектовать стратегию и операции организации подходящим персоналом, что позволяет улучшить возможности стратегического управления во всей организации. Затем отдел кадров должен взять на себя следующие три новые функции :

Участвуйте в стратегическом планировании. В процессе участия в разработке стратегического планирования отдел кадров должен понимать развитие всей компании, стратегический план компании и намеченные цели на следующий этап; конкретный план по достижению этих стратегий и целей; какой персонал нужен компании на следующем этапе и какие задачи стоят перед компанией. какими навыками и качествами должен обладать этот персонал. После полного овладения стратегической информацией отдел кадров должен тщательно проработать стратегию и цели и в то же время провести переоценку существующих сотрудников в соответствии со стратегическими целями и нанять новых специалистов в соответствии с ситуацией или обучить существующих сотрудников адаптации к новому стратегическому плану.

Участвуйте в организационном реинжиниринге. В процессе разработки стратегического планирования организационная структура должна быть разработана в соответствии со стратегическим планированием и стратегическими целями. Задача отдела кадров заключается в анализе преимуществ и недостатков человеческих ресурсов в организации и работе с руководителями и другими управленцами над перепланированием организационной структуры; перераспределении задач между должностями; поиске должностей, которые играют ключевую роль в развитии организации, и выделении подходящих таланты, чтобы построить организационную структуру, соответствующую стратегии.

Участвуйте в оперативном плане. В организации с динамичными возможностями стратегического управления отдел кадров не только нуждается в персонале для разработки стратегии и операций, но и участвует в разработке операционного плана, отслеживает и оценивает работу сотрудников и оценивает их эффективность, а также высказывает мнения и предложения относительно удержания персонала и целесообразности смены работы, или где усилить подготовку и упражнения.

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ФИЗИЧЕСКАЯ АКТИВНОСТЬ ПРИ НЕКРОЗЕ ГОЛОВКИ БЕДРЕННОЙ КОСТИ: РЕКОМЕНДАЦИИ ДЛЯ СТУДЕНТОВ

Аннотация. *Некроз головки бедренной кости (НГБК) является серьезной проблемой, приводящей к инвалидизации и снижению качества жизни, особенно у молодых и активных людей, таких как студенты. Зачастую при этом заболевании происходит ограничение физической активности, однако поддержание определенного уровня двигательной активности имеет важное значение для сохранения качества жизни. В статье рассмотрены безопасные и эффективные виды упражнений (плавание, велоспорт, ходьба) и виды спорта для студентов с НГБК на разных стадиях заболевания, а также ограничения по нагрузке и рекомендации по тренировочным режимам. Обсуждается важность индивидуального подхода к физической активности, консультаций с врачом и физиотерапевтом.*

Ключевые слова: *Некроз головки бедренной кости, асептический некроз, физическая активность, упражнения, спорт, студенты, реабилитация.*

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PHYSICAL ACTIVITY IN CASE OF NECROSIS OF THE FEMORAL HEAD: RECOMMENDATIONS FOR STUDENTS

Annotation. *Necrosis of the femoral head (NGBC) is a serious problem that leads to disability and a decrease in the quality of life, especially for young and active people such as students. Physical activity is often limited in this disease, but maintaining a certain level of physical activity is important for maintaining the quality of life. The article discusses safe and effective types of exercise (swimming, cycling, walking) and sports for students with NGBC at different stages of the disease, as well as exercise restrictions and recommendations for training regimens. The importance of an individual approach to physical activity, consultations with a doctor and a physiotherapist is discussed.*

Keywords: *femoral head necrosis, aseptic necrosis, physical activity, exercise, sports, students, rehabilitation.*

Введение: Некроз головки бедренной кости (НГБК), также известный как асептический некроз или аваскулярный некроз, представляет собой патологическое состояние, характеризующееся нарушением кровоснабжения головки бедренной кости, что приводит к гибели костной ткани и, в конечном итоге, к коллапсу суставной поверхности. НГБК может поражать людей любого возраста, однако наиболее часто встречается у лиц молодого и среднего возраста, в том числе у студентов, находящихся в активном периоде своей жизни.

Для студентов, ведущих активный образ жизни, включающий учебу, работу, социальную жизнь и занятия спортом, диагноз НГБК может стать серьезным ударом, приводящим к ограничению функциональных возможностей, снижению качества жизни и социальной изоляции. Ограничение подвижности и болевой синдром, характерные для НГБК, могут негативно сказываться на академической успеваемости, возможности трудоустройства и участии в общественной жизни. В связи с этим, разработка эффективных стратегий лечения и реабилитации, позволяющих студентам с НГБК сохранять активный образ жизни, является актуальной и значимой задачей.

Несмотря на то, что НГБК может потребовать хирургического вмешательства в запущенных случаях, консервативное лечение, включающее модификацию активности, физиотерапию и фармакологическую поддержку, играет важную роль в замедлении прогрессирования заболевания и облегчении симптомов.

Особое значение имеет правильно подобранная программа физической активности, учитывающая стадию заболевания, индивидуальные особенности пациента и цели лечения.

Цель данной статьи - предоставить обзор современных научных данных и практические рекомендации по физической активности и видам спорта для студентов с НГБК, направленные на поддержание их здоровья и функциональной активности, минимизацию рисков прогрессирования заболевания и повышение качества жизни.

Костная ткань является динамичной структурой, постоянно подвергающейся процессам ремоделирования, включающим резорбцию старой кости остеокластами и формирование новой кости остеобластами. Физическая активность, особенно нагрузка с осевым воздействием, играет ключевую роль в стимуляции костного ремоделирования и поддержании костной массы. Механизм, посредством которого механическая нагрузка преобразуется в биологический сигнал, стимулирующий остеогенез, известен как механотрансдукция.

Одной из ключевых теорий, объясняющих этот процесс, является закон Вольфа, который гласит, что кость адаптируется к нагрузкам, которым она подвергается, изменяя свою структуру и плотность для оптимального сопротивления этим нагрузка. На клеточном уровне, механическая стимуляция приводит к деформации остеоцитов, наиболее распространенных

клеток костной ткани, которые, в свою очередь, высвобождают сигнальные молекулы, стимулирующие активность остеобластов.

Кровоснабжение головки бедренной кости является сложным и деликатным процессом, осуществляемым через медиальную и латеральную обводящие артерии бедра, а также артерию связки головки бедренной кости. Нарушение кровоснабжения может приводить к развитию НГБК.

Умеренная физическая активность может оказывать положительное влияние на кровоснабжение головки бедренной кости, стимулируя вазодилатацию и улучшая микроциркуляцию. Исследования показали, что упражнения могут способствовать высвобождению эндотелиальных факторов, таких как оксид азота, который обладает сосудорасширяющим действием. Кроме того, физическая активность может стимулировать ангиогенез, то есть образование новых кровеносных сосудов, что также способствует улучшению кровоснабжения.

Несмотря на пользу умеренной физической активности, чрезмерная нагрузка и импактные виды спорта могут оказывать негативное воздействие на костную ткань и кровоснабжение головки бедренной кости. Повторяющиеся микротравмы, возникающие при интенсивных тренировках или ударных нагрузках, могут приводить к воспалению, отеку и повышению внутрикостного давления, что, в свою очередь, может нарушать кровоснабжение и способствовать развитию НГБК. По многочисленным исследованиям показано, что у спортсменов, занимающихся видами спорта с высокой ударной нагрузкой, такими как бег или прыжки, повышен риск развития стрессовых переломов и других костных повреждений.

Кроме того, чрезмерная нагрузка может приводить к дегенеративным изменениям в хрящевой ткани и развитию остеоартрита.

Исследования о влияния упражнений на боль, функцию и прогрессирование НГБК дали неоднозначные результаты, что может быть связано с различиями в протоколах упражнений, стадиях заболевания и характеристиках пациентов. Некоторые исследования не выявили значительного влияния упражнений на заболевание. Другие же показали, что программы упражнений с низкой ударной нагрузкой, могут улучшить функцию и снизить боль у пациентов с ранней стадией НГБК.

Аэробные упражнения, такие как ходьба, плавание и велоспорт, способствуют улучшению сердечно-сосудистой функции и общего состояния здоровья. Упражнения на укрепление мышц помогают стабилизировать тазобедренный сустав и снизить нагрузку на головку бедренной кости. Упражнения на растяжку и равновесие улучшают гибкость и координацию движений. Йога и пилатес помогут укрепить мышцы кора, улучшить гибкость и снизить стресс, но будет необходима модификация упражнений.

Однако, занятия физической активностью без консультации с врачом могут повлечь за собой угнетение состояния. При выборе вида физической активности необходимо учитывать стадию заболевания, индивидуальные особенности пациента и цели лечения.

В заключение, поддержание физической активности при некрозе головки бедренной кости (НГБК) – это достижимая, но требующая осторожного и индивидуального подхода задача. Не существует универсального решения, и каждый пациент должен работать в тесном сотрудничестве со своим лечащим врачом, чтобы разработать программу, учитывающую стадию заболевания, степень поражения сустава, общее состояние здоровья и личные предпочтения. Тщательный мониторинг, своевременная коррекция нагрузки и использование поддерживающих средств могут помочь сохранить активный образ жизни, улучшить качество жизни и замедлить прогрессирование НГБК. Главное – осознанный подход и стремление к поддержанию оптимального баланса между активностью и безопасностью.

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ИСПОЛЬЗОВАНИЕ ЦИФРОВЫХ ФИНАНСОВЫХ АКТИВОВ ПРИ ОПЛАТЕ ПО ВНЕШНЕТОРГОВЫМ КОНТРАКТАМ

Аннотация: *В данной статье рассматривается использование цифровых финансовых активов (ЦФА) в качестве оплаты по внешнеэкономическим контрактам. Актуальность темы обусловлена растущей популярностью криптовалют и других цифровых активов как альтернативы традиционным расчетным механизмам в международной торговле. Исследование посвящено преимуществам и рискам, связанным с применением ЦФА, а также правовым аспектам, касающимся их интеграции в существующие финансовые системы.*

Ключевые слова: *цифровые финансовые активы, внешнеэкономические контракты, международная торговля, криптовалюты, правовое регулирование.*

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THE USE OF DIGITAL FINANCIAL ASSETS WHEN PAYING FOR FOREIGN TRADE CONTRACTS

Abstract: *This article examines the use of digital financial assets (CFAs) in the payment process for foreign economic contracts. The relevance of the topic is due to the growing popularity of cryptocurrencies and other digital assets as alternatives to traditional settlement mechanisms in international trade. The study focuses on the advantages and risks associated with the use of CFAs, as well as legal aspects related to their integration into existing financial systems.*

Keywords: *digital financial assets, foreign economic contracts, international trade, cryptocurrencies, legal regulation.*

С развитием цифровых технологий и ростом популярности криптовалют возникает необходимость осмысленного подхода к использованию цифровых финансовых активов в международной торговле. Цифровые активы, такие как Биткойн или Эфир, становятся не только инструментом инвестирования, но и полноценной альтернативой фиатным деньгам для расчетов по внешнеэкономическим сделкам. Несмотря на очевидные преимущества, включая скорость и низкие комиссии, использование ЦФА также сопряжено с рисками, такими как волатильность

курсов и правовая неопределенность. Цель данной статьи — проанализировать текущие тренды в использовании цифровых финансовых активов для расчетов по внешнеэкономическим контрактам, оценить их преимущества и недостатки, а также рассмотреть правовые аспекты их интеграции в международные торговые процессы.

Для достижения поставленных целей были использованы методы анализа и синтеза, а также сравнительный подход. Исследование опирается на данные из различных источников, включая научные публикации, статьи в специализированных изданиях и официальные документы, регулирующие использование цифровых активов. Анализ будет сопровождаться иллюстрациями, основанными на статистических данных и примерах успешного применения ЦФА в международной практике.

В рамках исследования использования цифровых финансовых активов в оплате по внешнеэкономическим контрактам, необходимо углубиться в несколько ключевых аспектов, которые могут оказать значительное влияние на понимание и применение этих инструментов.

Первые шаги для эффективного внедрения ЦФА в международную торговлю требуют тщательного анализа текущего законодательства в разных юрисдикциях, поскольку правовые рамки продолжают оставаться лишь на стадии формирования. В некоторых странах, таких как Эстония и Сингапур, наблюдается стремление к созданию прогрессивного законодательства, способствующего использованию цифровых активов, что может служить образцом для многих государств.

Следует провести сравнительный анализ эффективности использования ЦФА в разных странах. Например, Нидерланды, обладая современными цифровыми инфраструктурами, уже активно интегрируют блокчейн-технологии в свои ликвидные финансовые системы. Это позволяет быстро и безопасно проводить транзакции, снижая затраты и временные рамки. В этом контексте исследование может сосредоточиться на оценке успешных кейсов, в которых компании использовали ЦФА для расчетов по внешнеэкономическим сделкам, выявляя ключевые факторы, способствующие их успеху.

Использование цифровых финансовых активов для расчетов по внешнеэкономическим контрактам в России на сегодня приобретает все большую популярность, и данная тенденция требует тщательного рассмотрения с учетом правовых, экономических и технических аспектов. На момент последнего обновления законодательных норм и динамики в 2023 году, в стране уже разработаны некоторые базовые правовые рамки для интеграции ЦФА в международную торговлю.

Россия активно работает над созданием нормативной базы, регулирующей использование ЦФА. В 2020 году был принят закон № 259-ФЗ «О цифровых финансовых активах, цифровой валюте и о внесении изменений в отдельные законодательные акты Российской Федерации», который лег в основу правового регулирования в данной сфере. Он определяет ЦФА как

цифровые права, и вводит для них отдельные нормативные правила. В рамках этого закона были обозначены механизмы их выпуска, обращения и правовой защиты принадлежащих прав.

Внешнеэкономические контракты, включающие ЦФА, могут быть использованы как средства платежа или в качестве механизма обеспечения сделок. Например, фирмы могут решить использовать криптовалюту для оплаты международных поставок, особенно в условиях санкционного давления. Это делает внешнеэкономическую деятельность более гибкой и устойчивой к рискованным изменениям на валютном рынке.

Кроме того, использование умных контрактов, встроенных в блокчейн-технологии, может автоматизировать выполнение условий сделок. Умные контракты позволяют сторонам задать четкие условия для транзакций, которые автоматически исполняются при выполнении определенных условий. Это не только снижает вероятность мошенничества, но и уменьшает затраты на исполнение контрактов, так как исключает необходимость в посредниках.

Важной частью применения ЦФА во внешнеэкономических сделках является согласование условий контрактов с учетом валютных рисков. Конечные условия могут включать колебания курсов, а также специальные механизмы, предусмотренные для защиты от потерь, связанных с изменениями рыночной стоимости ЦФА. Учитывая высокую волатильность многих криптовалют, такая практика может гарантировать более предсказуемые результаты для обеих сторон сделки.

Однако, несмотря на все преимущества, на пути использования ЦФА в международной торговле в России существует ряд серьезных препятствий, связанных с неопределенностью в правовом регулировании. Отсутствие четких инструкций и практической реализации норм может привести к рискам несоответствия требованиям международного законодательства и возможности наложения санкций в случае неправильного использования.

Для успешной интеграции ЦФА во внешнеэкономические контракты российским компаниям потребуется тщательно обеспечить юридическую чистоту сделок, проводить комплексные консультации с экспертами в области права и финансов, а также следить за изменениями в международной практике и праве. Важно также наладить диалог с государственными органами экономики и финансов для четкого понимания перспектив и рисков, связанных с использованием ЦФА в международной торговле.

В перспективе, по мере развития законодательства и уменьшения неопределенности, ожидается, что использование ЦФА во внешнеэкономических сделках будет расти, что потребует от компаний нового уровня подготовки и адаптации к современным цифровым экономическим реалиям.

Кроме того, важно рассмотреть влияние на устойчивость и безопасность финансовых систем. Использование децентрализованных технологий, таких как блокчейн, обеспечивает прозрачность транзакций и минимизирует риски

мошенничества. Однако необходимо осветить и потенциальные уязвимости, связанные с применением ЦФА, такие как вероятность кибератак, отсутствие достаточной защиты пользователей и волатильность цифровых активов.

Важным аспектом для анализа будет и влияние на налоговую политику. Внедрение ЦФА может повлиять на налоговые режимы, требуя от государства пересмотра существующих правил налогообложения, чтобы учесть характер транзакций с цифровыми активами. Это поднимает ряд вопросов о том, как валюта и активы, основанные на блокчейне, будут классифицироваться в налоговом контексте.

В области управляемости рисками тоже следует уделить внимание тому, как предприятия могут использовать ЦФА как инструмент хеджирования. Это может касаться, например, международных контрактов, где колебания валютного курса могут существенно влиять на финансовые результаты. Потенциал использования умных контрактов для автоматизации расчетов и управления процессами может стать еще одним направлением для исследования.

Также полезно будет провести опрос среди участников рынка, чтобы понять их восприятие ЦФА, уровни готовности к их использованию и потенциальные барьеры, с которыми они сталкиваются. Важно учитывать мнения как крупных корпораций, так и малых и средних предприятий, чтобы сформировать полное представление о ситуации.

В заключение, углубленное изучение применения цифровых финансовых активов в качестве расчетов по внешнеэкономическим сделкам позволит выявить не только преимущества и недостатки, но и даст возможность сформировать рекомендации для бизнеса и правительств, способствующие более широкому и безопасному использованию этих инструментов. Такое исследование создано для того, чтобы помочь найти и установить равновесие между инновациями и необходимостью правового регулирования, что станет основой для дальнейшего развития международной торговли.

Использование цифровых финансовых активов в качестве оплаты по внешнеэкономическим контрактам представляется многообещающим направлением, но требует более глубокого исследования и правового регулирования. Необходимость адаптации существующих норм закона к новым условиям и технологиям, а также создание системы безопасности для сделок с использованием ЦФА являются ключевыми шагами для успешной интеграции цифровых активов в международную торговлю. В заключение можно сказать, что при правильной законодательной базе и осмысленном подходе, цифровые активы могут стать важным инструментом для упрощения и оптимизации процессов внешнеэкономической деятельности.

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МЕТОДЫ ВОССТАНОВЛЕНИЯ ПОСЛЕ ФИЗИЧЕСКИХ НАГРУЗОК

Аннотация. *В данной статье представлен краткий обзор текущей системы физического воспитания молодежи. Подчеркивается значимость физического образования для поддержания здорового образа жизни. Об отмечено, что действующая в стране система физического воспитания студентов ориентирована на развитие внутренней мотивации к ведению здорового образа жизни. Указывается на то, что регулярная физическая активность способствует улучшению психического, когнитивного и эмоционального состояния человека. Также представлены ключевые направления практической деятельности в области спортивного туризма, направленные на укрепление здоровья учащихся.*

Ключевые слова: *физическое воспитание, федеральный закон, учебные заведения, двигательная активность, здоровье, здоровый образ жизни, высшая школа, студенты, формирование.*

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METHODS OF RECOVERY FROM PHYSICAL ACTIVITY

Abstract: *This article provides a brief overview of the current system of physical education for young people. The importance of physical education for maintaining a healthy lifestyle is emphasized. It was noted that the current system of physical education of students in the country is focused on the development of internal motivation to lead a healthy lifestyle. It is indicated that regular physical activity contributes to improving the mental, cognitive and emotional state of a person. Key areas of practical activity in the field of sports tourism aimed at improving the health of students are also presented.*

Key words: *physical education, federal law, educational institutions, physical activity, health, healthy lifestyle, higher education, students, formation.*

В данной статье мы вкратце рассмотрим актуальные методы восстановления после физических упражнений, с особым вниманием к значимости отдыха после занятий спортом. Также будет представлена классификация типов физической активности в контексте физической культуры. Важность физических нагрузок для организма подтверждается большим количеством научных работ. Исследования выявили прямую взаимосвязь между уровнем двигательной активности и способностью тканей и органов усваивать кислород, а также возможностью организма увеличивать мышечную массу и снижать количество жировой ткани.

Ключевые термины: физические упражнения, восстановление, виды физических нагрузок, двигательная активность, тренировки, восстановление организма, управление стрессом, режим питания.

Физическая нагрузка представляет собой двигательную активность и работу мышц, интенсивность и уровень которой зависят от характера деятельности человека. Например, в офисной среде физическая нагрузка минимальна, а в спорте достигает высоких показателей.

Классификация физических нагрузок в спорте:

Существует несколько типов двигательной активности, каждый из которых предназначен для выполнения определенных задач.

Аэробная нагрузка возникает при кардиотренировках, таких как бег, ходьба, сноубординг, езда на велосипеде, гребля, плавание и другие виды активности с малой интенсивностью, направленные на: снижение веса за счет сжигания жира, стимуляцию работы сердечно-сосудистой и дыхательной систем, повышение выносливости.

Преимущество аэробной нагрузки в отсутствии противопоказаний. Каждый, в зависимости от возраста, состояния здоровья и уровня подготовки, может выбрать подходящую интенсивность.

Анаэробная нагрузка – это вид двигательной активности, при котором энергия для работы мышц образуется без участия кислорода. Она возникает при силовых упражнениях (бодибилдинге), направленных на: увеличение силы, наращивание мышечной массы, развитие выносливости. Данный вид нагрузки можно выполнять на тренажерах или со свободным весом.

Интервальная нагрузка предполагает чередование аэробной и анаэробной активности, например, сочетание бега высокой и низкой интенсивности в рамках одной тренировки.

Гипоксическая нагрузка – это интенсивная работа в условиях недостатка кислорода, рекомендуемая спортсменам с высокой подготовкой, планирующим тренироваться в высокогорье.

Виды физических нагрузок и их интенсивность

Нагрузка в спорте характеризуется частотой, продолжительностью и интенсивностью, которая признана важным показателем эффективности двигательной активности. Интенсивность – это общее количество упражнений, выполненных с определенной мощностью, скоростью и плотностью. Оценивать интенсивность работы мышц можно по частоте

сердечных сокращений (ЧСС). Эффективность физических нагрузок зависит от их типа, интенсивности и достигнутой ЧСС. Интенсивность по тренировочному эффекту делится на несколько зон: нулевую (аэробные процессы) – ЧСС до 130 ударов в минуту (разминка, активный отдых, восстановление при интервальной тренировке), первую (аэробные процессы) – ЧСС от 130 до 150 ударов в минуту (для начинающих), вторую (порог анаэробных процессов) – ЧСС от 150 до 180 ударов в минуту, третью (анаэробные процессы) – ЧСС более 180 ударов в минуту. Для обеспечения определенной двигательной активности требуется оборудование.

Важность отдыха после тренировки:

После интенсивных тренировок организму необходимо время для восстановления и адаптации. Физические упражнения стимулируют рост мышц и улучшают здоровье сердца и сосудов, но при этом нагружают ткани и истощают запасы энергии. Без достаточного отдыха возникает переутомление, снижается работоспособность, повышается риск травм и может развиться синдром перетренированности. Рассмотрим различные фазы восстановления организма после тренировки.

1. Фаза немедленного восстановления

Фаза немедленного восстановления наступает сразу после тренировки и длится от 30 минут до часа. В этот период организм готов пополнять запасы гликогена, восстанавливать мышечную ткань и регидратировать. Фитнес-клубы предлагают следующие стратегии для оптимизации немедленного восстановления:

Сбалансированный прием пищи или перекус, включающий белки и углеводы, в течение первого часа после тренировки помогает запустить процесс восстановления. Эти питательные вещества обеспечивают строительные блоки, необходимые для восстановления мышц и синтеза гликогена.

2. Этап быстрого восстановления

Быстрое восстановление – это время, когда организм активно восстанавливается и регенерирует. Микротравмы, полученные мышцами во время тренировок, вызывают воспалительную реакцию и повреждение клеток. Несмотря на кажущуюся контрпродуктивность, это естественный этап наращивания мышечной массы. Правильное восстановление делает тело сильнее и готовит его к будущим нагрузкам.

Эффективные методы быстрого восстановления:

Активное восстановление: Умеренные физические нагрузки, такие как легкая пробежка, плавание или неспешная езда на велосипеде, стимулируют кровообращение в утомленных мышцах. Улучшенный приток крови обеспечивает доставку необходимых питательных веществ и кислорода, а также способствует выведению продуктов распада.

Растяжка и гибкость: Статические и динамические упражнения на растяжку помогают снять мышечное напряжение и улучшить гибкость.

Целенаправленное воздействие на основные группы мышц уменьшает риск мышечного дисбаланса после тренировки и повышает общую подвижность.

Гидратация и питание: Восполнение потерянной жидкости и питательных веществ – ключевой фактор восстановления.

3. Этап долгосрочного восстановления:

Долгосрочное восстановление – это более масштабный подход к физической подготовке. Он охватывает недели и месяцы регулярных тренировок и стратегий восстановления. Комплексный подход в фитнес-клубе обеспечивает долгосрочное восстановление благодаря:

Система тренировок: Опытные тренеры фитнес-клуба используют метод периодизации, чередуя высокоинтенсивные и низкоинтенсивные тренировки для предотвращения перетренировок и оптимизации процесса восстановления.

Планирование питания: Индивидуальные планы питания разрабатываются с учетом личных целей и поддерживают долгосрочное восстановление организма.

Дыхательные упражнения: Упражнения на глубокое дыхание помогают уменьшить стресс, снизить уровень кортизола и расслабиться. Техники контролируемого дыхания – ценные инструменты для психического и физического восстановления.

Управление стрессом: Высокий уровень стресса может препятствовать восстановлению. Фитнес-инструктор уделяет особое внимание таким методам борьбы со стрессом, как медитация, упражнения на внимательность и расслабление, что способствует улучшению общего самочувствия.

Восстановление – это комплексный процесс, и его эффективность повышается за счет сочетания разных подходов. Один из важных аспектов – это **социальная поддержка**. Вступление в сообщество людей, ведущих активный образ жизни и занимающихся фитнесом, создает благоприятную среду для восстановления. Общение с единомышленниками, обмен опытом, обсуждение трудностей и совместное празднование успехов укрепляют чувство принадлежности и мотивируют продолжать двигаться вперед. Это помогает преодолевать трудности и сохранять позитивный настрой на пути к выздоровлению. Другой важный компонент – это **интеллектуальные практики**, направленные на гармонизацию физического и психического состояния. Йога, пилатес и тай-чи – это не просто физические упражнения, улучшающие гибкость и баланс. Они способствуют расслаблению ума, развитию осознанности и внутреннего спокойствия. Включение этих практик в программу восстановления позволяет достичь более целостного и сбалансированного эффекта, поскольку работают над физическим телом и умственным состоянием одновременно. Такой комплексный подход способствует общему улучшению самочувствия и ускоряет процесс восстановления.

Прислушивайтесь к своему организму

Индивидуальные различия

Процесс восстановления после физических нагрузок – это крайне индивидуальный аспект, который нельзя игнорировать, стремясь к улучшению физической формы. Скорость, с которой ваше тело восстанавливается после тренировок, зависит от множества факторов, и ни один из них нельзя недооценивать. Возраст играет ключевую роль: молодой организм, как правило, восстанавливается быстрее, чем организм человека старшего возраста. Уровень вашей физической подготовки – еще один важный компонент. Если вы новичок в спорте, то ваше тело будет нуждаться в более длительном отдыхе, чем у опытного атлета, привыкшего к регулярным нагрузкам. Генетика также оказывает существенное влияние. Некоторые люди обладают врожденной способностью к быстрому восстановлению, в то время как другие нуждаются в более продолжительном периоде отдыха для достижения оптимального результата. Наконец, общее состояние здоровья является, пожалуй, наиболее значимым фактором. Наличие хронических заболеваний, недолеченных травм или просто плохое самочувствие значительно замедляют процесс восстановления и могут даже привести к перетренированности. Поэтому крайне важно внимательно прислушиваться к своему организму. Обращайте внимание на любые сигналы усталости, боли в мышцах, суставах или связках. Изменения настроения, снижение концентрации внимания, постоянное чувство разбитости – все это свидетельствует о необходимости корректировки тренировочного процесса и, прежде всего, режима восстановления. Не стоит игнорировать эти сигналы, пытаясь "прорваться" через боль или усталость. Это может привести к серьезным проблемам со здоровьем, вплоть до травм, которые потребуют длительного лечения и реабилитации. В случае постоянной усталости или болей, необходимо увеличить количество дней отдыха между тренировками. [2]. Если же симптомы сохраняются, следует незамедлительно обратиться к врачу или специалисту по спортивной медицине для проведения обследования и получения квалифицированной помощи. Не стоит забывать, что самолечение может быть крайне опасно. Комплексный подход к тренировкам, который, как правило, предлагают современные фитнес-клубы, включает в себя не только сами тренировки, но и детально разработанные программы восстановления. Это понимание важности восстановления – залог успеха в достижении спортивных целей. Только грамотный баланс между физической нагрузкой и отдыхом позволяет добиться оптимальных результатов без вреда для здоровья. Необходимо помнить, что восстановление – это не менее важный этап, чем сами тренировки. Они являются двумя сторонами одной медали, и пренебрежение одной из них неизбежно приведет к снижению эффективности другой. На начальных этапах занятий спортом, когда организм ещё не адаптировался к нагрузкам, утомление и потеря сил – это вполне нормальное явление. Тело просто ещё не привыкло к новым требованиям. Однако с течением времени, по мере регулярных тренировок, вы заметите, как ваше тело становится более выносливым, а усталость после тренировок уменьшается. Более того, регулярные физические упражнения

оказывают благотворное влияние не только на физическое, но и на эмоциональное состояние. Спорт помогает справиться со стрессом, улучшает настроение, повышает самооценку и способствует общему улучшению качества жизни.

"Спорт – это замечательно!" – это не просто лозунг, а констатация факта, подтвержденного многочисленными исследованиями и опытом миллионов людей по всему миру. Правильный подход к тренировкам и восстановлению – это ключ к здоровому образу жизни и достижению спортивных успехов. [3].

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АНАЛИЗ ФОРМИРОВАНИЯ И ИСПОЛЬЗОВАНИЯ ФИНАНСОВЫХ РЕСУРСОВ Г.О. САМАРА САМАРСКОЙ ОБЛАСТИ

Аннотация: *В статье рассматриваются вопросы формирования и использования финансовых ресурсов муниципального образования. На примере бюджета городского округа Самара Самарской области рассмотрены основные показатели состояния финансов, проанализировано формирование и использование финансовых ресурсов. Сделаны ключевые выводы и выявлены проблемы.*

Ключевые слова: *финансовые ресурсы, бюджет, доходы бюджета.*

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ANALYSIS OF THE FORMATION AND USE OF FINANCIAL RESOURCES OF THE CITY OF SAMARA, SAMARA REGION

Abstract: *The article discusses the issues of formation and use of financial resources of a municipal entity. Using the example of the budget of the Samara city district of the Samara region, the main indicators of the state of finances are considered, the formation and use of financial resources are analyzed. Key conclusions are drawn and problems are identified.*

Keywords: *financial resources, budget, budget revenues.*

Финансовые ресурсы муниципального образования прежде всего связаны с формирование и распределением бюджетных средств.В составе муниципальных финансовых ресурсов особая роль принадлежит бюджетным ресурсам. В их состав правомерно включать доходы, денежные поступления и заемные средства [4]. Главной составной частью финансовых ресурсов муниципального образования является муниципальный бюджет. Его средства - это важнейший источник финансирования местных потребностей развития территориальной инфраструктуры [3]. Качественное управление финансовыми ресурсами муниципального образования играет важную роль в его развитии и благосостоянии жителей. Успешное управление финансами

позволяет обеспечить развитие инфраструктуры, социальных программ и предоставление качественных услуг населению [1].

Таким образом, оценка управления финансовыми ресурсами г.о. Самара Самарской области прежде всего связана с формированием и использованием городского бюджета (см.табл. 1).

Таблица 1 – Показатели формирования и использования финансовых ресурсов г.о. Самара Самарской области, млн.руб. [3]

Показатели	2022г.	2023г.	2024г.	Отклонение	
				абс.,руб.	отн., %
Общая сумма доходов бюджета	46504,92	41352,21	51625,04	5120,12	111,01
Общая сумма расходов бюджета (всего), из них:	46488,46	42576,26	51981,05	5492,59	111,81
- образование	7602,77	8838,75	9408,74	1805,97	123,75
- культура	1020,96	1259,17	2157,84	1136,88	211,35
- физическая культура и спорт	771,95	1032,64	1222,45	450,50	158,36
- жилищно-коммунальное хозяйство	13579,83	5753,05	5763,54	-7816,30	42,44
- содержание работников органов местного самоуправления (в расчете на 1 жителя)	0,78	0,91	1,09	0,31	139,15
- развитие и поддержка малого и среднего предпринимательства	62,52	70,88	63,72	1,20	101,92
- транспорт	2780,00	2968,19	6373,55	3593,55	229,26
- дорожное хозяйство	4218,47	4710,94	6740,36	2521,89	159,78
Величина дефицита (профицита)	16,47	-1224,05	-356,01	-372,48	-2161,99

Анализ показателей таблицы 10 демонстрирует некоторые важные тенденции и изменения. Общая сумма доходов бюджета: в 2022 году доходы составили 46,5 млрд руб., в 2023 — 41,3 млрд руб., а в 2024 — 51,6 млрд руб. - В 2023 году наблюдается значительное снижение доходов по сравнению с 2022 годом (на 10,57%). В 2024 году доходы снова увеличиваются, что говорит о возможном восстановлении экономики или изменении налогового законодательства.

Расходы бюджета в 2022 году составили 46,5 млрд руб., в 2023 — 42,6 млрд руб., а в 2024 — 52 млрд руб. В 2023 году расходы также снизились по сравнению с 2022 годом (на 8,97%), однако в 2024 году они значительно

вырастают на 22,06%. Это может свидетельствовать о перераспределении бюджетных средств или увеличении потребностей в финансировании.

Расходы на образование увеличились с 7602,77 млн руб. в 2022 году до 8838,75 млн руб. в 2023 году и достигли 9408,74 млн руб. в 2024 году. Это рост на 23,75% за три года, что отражает приоритетность сферы образования.

Расходы на культуру возросли более чем в два раза (с 1020,96 до 2157,84 млн руб.). Этот рост (211,35%) может указывать на активные инвестиции в культурные проекты и инициативы.

Расходы увеличились почти на 58,36%, что может быть связано с программами по развитию спорта и физической активности населения.

Жилищно-коммунальное хозяйство: здесь наблюдается резкое сокращение расходов с 13,5 млрд руб. в 2022 году до 5,8 млрд руб. в 2023 году. Однако в 2024 году небольшое увеличение (до 5,8 млрд руб.) может говорить о принятии мер для улучшения данной сферы.

Расходы на содержание местных органов власти возросли с 0,78 до 1,09 руб. на душу населения, что может свидетельствовать о росте административных затрат.

Развитие и поддержка малого и среднего предпринимательства: отмечается незначительное увеличение, однако это показатель, который может сильно варьироваться в зависимости от экономической ситуации и программ поддержки.

Структура доходной части бюджета представлена на рисунке 1.

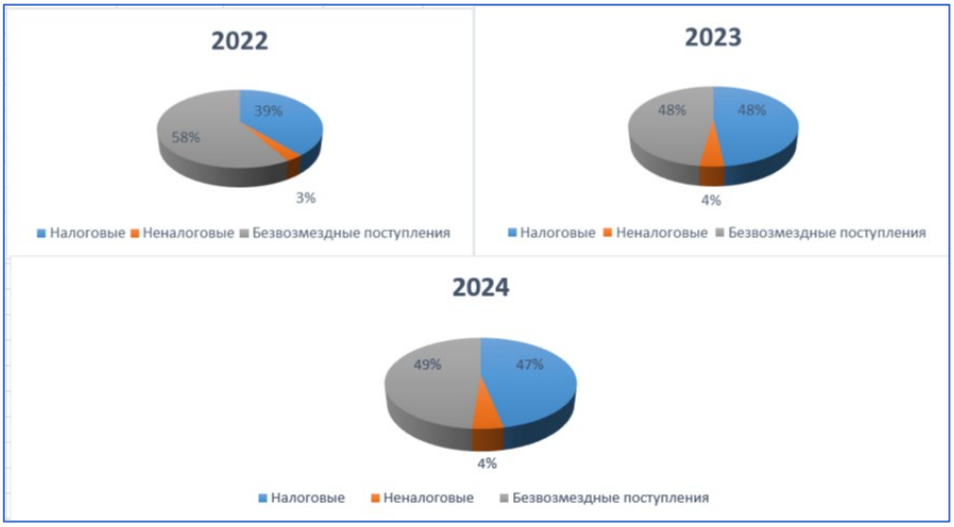

Рисунок 1 – Структура доходной части бюджета г.о. Самара Самарской области

Налоговые доходы показали значительный рост с 39% в 2022 году до 48% в 2023 году, что может свидетельствовать о повышении налогов, улучшении собираемости налогов или росте экономики. В 2024 году

наблюдается небольшое снижение до 47%, что может указывать на стабилизацию или некоторую коррекцию.

Неналоговые доходы остаются довольно стабильными, увеличившись с 3% в 2022 году до 4% в 2023 и 2024 годах. Это увеличение, хоть и небольшое, может говорить о повышении эффективности работы с неналоговыми источниками, но в целом эта категория доходов не демонстрирует значительного роста.

Безвозмездные поступления составляют значительную долю бюджета, но с 58% в 2022 году наблюдается резкое снижение до 48% в 2023 году. Это может указывать на уменьшение внешних финансовых поступлений, например, грантов или субсидий. В 2024 году эта доля немного увеличивается до 49%, но все равно остается ниже уровней 2022 года, что может быть тревожным сигналом о зависимости бюджета от внешних источников финансирования.

Структура доходной части бюджета демонстрирует определенные изменения в зависимости от таргетирования налоговых и неналоговых доходов, а также зависимости от безвозмездных поступлений. Основное внимание уделяется налоговым доходам, которые растут, но есть тенденция к уменьшению доли безвозмездных поступлений, что может требовать внимания со стороны финансовых и экономических регуляторов. Стратегии по улучшению налоговой базы и увеличению неналоговых доходов могут стать ключевыми в дальнейших планах финансирования бюджета.

Таким образом, оценка управления финансовыми ресурсами г.о. Самара показывает, что муниципальное образование сталкивается с комплексом экономических вызовов, которые влияют на доходы и расходы бюджета. Приоритеты в расходах смещаются в сторону образования, культуры и здоровья, однако необходимо обратить внимание на высокие дефициты и сокращения в критически важных сферах, таких как жилищно-коммунальное хозяйство. Инвестиции в инфраструктуру также являются значимым направлением, способствующим улучшению жизнедеятельности региона. В целом, бюджет г.о. Самара показывает положительную динамику роста налоговых и неналоговых доходов, что является хорошим признаком для экономики региона. Однако резкое снижение безвозмездных поступлений в 2023 году требует внимания и анализа причин его возникновения, а также разработки мер по улучшению ситуации в будущем.

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АЛГОРИТМ ДЛЯ РАСЧЕТА СИСТЕМ КАПЕЛЬНОГО ОРОШЕНИЯ ДЛЯ ОДНОЙ КУЛЬТУРЫ

Аннотация. *В этой статье приведен алгоритм для расчета систем капельного орошения для одной культуры и на основе этого алгоритма создана программа на языке Delphi-7.*

Ключевые слова. *Алгоритм, орошения, поливной блок, схема посадки, капельная лента.*

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ALGORITHM FOR CALCULATING DRIP IRRIGATION SYSTEMS FOR ONE CULTURE

Abstract. *In this article presents an algorithm for calculating drip irrigation systems for a single crop and a program in the Delphi-7 language is created based on this algorithm.*

Keywords. *Algorithm, irrigation, irrigation block, planting scheme, drip tape.*

Основные этапы проектирования:

1. Предварительный расчет потребления.
2. Вычисление количества капельной ленты, которая понадобится для каждого конкретного участка в соответствии со схемой посадки.
3. Разделение участка на поливные блоки с учетом длины рядов, мощности насосного оборудования и дебета источника воды.
4. Подбор фильтростанции на основе сведений о расходе жидкости по каждому блоку, желаемом времени полива и типу источника воды.
5. Подбор разводящих и магистральных трубопроводов.

Расчет трубопровода выполняется в такой последовательности:

1. Определяют диаметр отдельно для каждого участка – по скорости потока и расходу воды.
2. Рассчитывают потери напора на каждом участке.

3. Узнают суммарную потерю напора.

4. В зависимости от рабочего давления на конце трубопровода, определяют требуемой давление на входе.

5. Сравнивают, насколько возможности источника водоснабжения соответствуют потребностям поливной системы.

Подсчет всех параметров системы орошения – это сложный процесс, где необходимо учесть множество факторов. Лучше всего доверить эту задачу инженерам-технологам, имеющим опыт и практические наработки.

1.Входные данные:

S-площадь возделяемой культуры.(в гектарах)

T-планируемое время работы системы в сутке. (в часах, обычно 16-20 часов)

Q_g -максимальная оросительная норма.(м3/гектар). В Украине 60-70м3/га

L- расстояние между оросительными трубками.(в метрах).

Q_t -пропускная способность разводного трубопровода.(в м3/час)

x- расстояние между эмиттерами оросительной трубки.(в метрах)1.(Например x=0.3м)

q-норма вылива одного эмиттера.(в литр/час). Например q=1,4литр/час)

V-Экономическая целесообразная скорость движения воды в магистральной

трубопроводе. В пределах 0,9 … 1,9метр/секунд.

2. Вычисление расхода воды. (м3/час)

$$Q = \frac{Q_g \cdot S}{T}$$

Q -расход воды м3/час.

3. Вычисление потребности оросительной трубки.(в метрах).

$$L_t = \frac{10000 \cdot S}{L}.$$

$\left[\frac{L_t}{x}\right] + 1$-количество эмиттеров.

[y]-целая часть числа y.

4. Разбивка участка на поливочные блоки.(в гектарах)

Таблица 1. Максимальная пропускная способность разводных трубопроводов

№	Диаметр трубопровода,мм	Пропускная способность, Q_t м3
1	25	4
2	32	6
3	63	23
4	75	40
5	110	80
6	125	88
7	140	110

$$S_b = \frac{Q_t \cdot L \cdot x}{10 \cdot q}$$

S_b-размер поливочного блока.(в гектарах).

$\left[\frac{S}{S_b}\right]+1$-количество поливочных блоков.

5. Вычисление расхода воды на гектар.(м3/час)

$$W = \frac{10 \cdot q}{L \cdot x}$$

W - расход воды на гектар.

Размеры поливных блоков зависят и от технических характеристик капельной трубки. К примеру, в случае со стандартной модификацией диаметром 16 мм при расстоянии между эмиттерами 0,3 м и норме вылива 1,1 л/ч максимальная длина линии составит, примерно 150 м (при неравномерности в 15 %). Ориентируясь на это значение, на практике делать

поливочные линии лучше на 10-20 % короче максимально допустимых. Рассчитав это значение, определяют длину магистрального трубопровода.

6.Уточнение потребности в воде и время полива конкретного поливочного блока.

$$W_i = W \cdot S_b$$

W_i - расход воды конкретного поливочного блока.

$\frac{Q_g}{W}$ -максимальное время полива конкретного поливочного блока.

7. Расчет магистральных трубопроводов.(в метрах)

Диаметр магистральных трубопроводов определяется по формуле:

$$D = 1{,}13 \cdot \sqrt{\frac{W_i}{3600 \cdot V}}$$

Фактическая скорость движения воды в трубопроводах определяется по формуле:

$$V_f = \frac{W_i}{w},$$

где $w = \frac{\pi \cdot D^2}{4}$.

8. Выходные данные

Q -расход воды м3/час.

L_t -потребности оросительной трубки.(в метрах).

$\left[\frac{L_t}{x}\right] + 1$ -количество эмиттеров.

S_b -размер поливочного блока.(в гектарах).

$\left[\frac{S}{S_b}\right] + 1$ -количество поливочных блоков.

W - расход воды на гектар.

W_i - расход воды конкретного поливочного блока.

$\frac{Q_g}{W}$ -максимальное время полива конкретного поливочного блока.

D-диаметр магистральных трубопроводов.

V_f - фактическая скорость движения воды.

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ПРОБЛЕМА ДЕТЕРМИНИЗМА В БИОЛОГИИ

Аннотация: *В статье представлена историко-теоретическая ретроспектива принципа детерминизма в философии науки, который составляет неотъемлемую часть ее методологического фундамента. Раскрыты основные этапы эволюции данного принципа от эпохи античности, когда биологические учения развивались в лоне философии, до современности, в которой философии биологии имеет статус самостоятельной научной дисциплины. Показано как трансформации предмета биологии ведут к изменениям предмета биофилософии. Вместе с тем философия биологии рассматривает биологию как феномен культуры, включает наиболее общее представления о мире живого, взятые в их универсальном значении для всего человечества.*

Ключевые слова: *детерминизм, индетерминизм, детерминация, методологический принцип, этапы развития принципа детерминизма.*

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THE PROBLEM OF DETERMINISM IN BIOLOGY

Annotation: *The article presents a historical and theoretical retrospective of the principle of determinism in the philosophy of science, which forms an integral part of its methodological foundation. The main stages of the evolution of this principle are revealed from the era of antiquity, when biological teachings developed in the bosom of philosophy, to the present, in which the philosophy of biology has the status of an independent scientific discipline. It is shown how transformations of the subject of biology lead to changes in the subject of*

biophilosophy. At the same time, the philosophy of biology considers biology as a cultural phenomenon, includes the most general ideas about the world of life, taken in their universal meaning for all mankind.

Keywords: *determinism, indeterminism, determination, methodological principle, stages of development of the principle of determinism.*

Проблема детерминизма чрезвычайно актуальна. Каждый новый этап в развитии науки, очередное фундаментальное открытие или нарождающееся научное направление вскрывают в проблеме детерминизма новые мировоззренческие и методологические пласты, которые на каждом новом витке познания «омолаживается», приобретает новый лик.

Суть проблемы детерминизма в биологии, в упрощенном виде, заключается в вопросе насколько предопределено развитие и поведение живых организмов. Иначе говоря, является ли организм лишь сложной машиной, полностью подчиняющейся физическим и химическим законам, или же в биологических процессах присутствует элемент случайности и свободы, не сводимый к жесткой причинно-следственной связи?

С одной стороны, успехи молекулярной биологии, генетики и нейробиологии, демонстрирующие детальные механизмы регуляции генов, метаболических путей и нервной деятельности, склоняются к детерминистскому взгляду. Кажется, что, зная все начальные условия и законы природы, можно предсказать состояние организма в любой момент времени.

С другой стороны биологические системы характеризуются высокой сложностью, нелинейностью и чувствительностью к начальным условиям. Даже небольшие случайные флуктуации на молекулярном уровне могут приводить к значительным последствиям в развитии и поведении. Более того, эволюция, основанная на мутации и естественном отборе, предполагает наличие случайных изменений в геноме, которые не могут быть полностью детерминированы.

Ключевым аргументом против жесткого детерминизма является понятие эмерджентности – появление новых, несводимых к сумме частей, свойств не более высоких уровнях организации (например, сознание).

Таким образом, проблема детерминизма в биологии остается открытой. Вероятно, истина находится где-то посередине: биологические процессы детерминированы в рамках определенных ограничений, во внутри этих рамок присутствует элемент случайности и возможности альтернативных путей развития. Дальнейшие исследования в области системной биологии и сложных систем могут пролить свет на этот фундаментальный вопрос.

Для всех областей научного познания принцип детерминизма – фундаментальный общенаучный методологический принцип, требующий обязательного учета разнокачественного и разнонаправленного влияния различных реальных факторов (причин, детерминант) на характер и развитие изучаемых явлений и процессов. Основными функциями принципа

детерминизма являются: организация системы знания в конкретных науках и их концептуализация; достижение понимания того, когда и как возникают, функционируют, развиваются, преобразуются изучаемые процессы и явления; сближение проводимых научных исследований с потребностями и запросами общества, реальной жизни. Эти же функции принцип детерминизма выполняет и в социально-гуманитарных науках.

В числе важнейших научных проблем теории исторического процесса важное место занимает вопрос о детерминантах общественного развития. В связи с бурным развитием естествознания в начале XX века и в социально-гуманитарных науках происходило усиление методологических позиций биологического детерминизма.

Основные направления обсуждения проблемы детерминизма в биологии: телеология, механический детерминизм, органический детерминизм, акциденционализм, финализм. Детерминизм и индетерминизм в трактовке процессов жизнедеятельности. Разнообразие форм детерминации в живых системах и их взаимосвязь. Сущность и формы биологической телеологии: феномен «целесообразности» строения и функционирования живых систем, целенаправленность как фундаментальная черта основных жизненных процессов, функциональные описания и объяснения в структуре биологического познания.

Детерминизм как философская концепция утверждает, что все явления в мире связаны причинно-следственными отношениями. С философской точки зрения, он включает в себя категории причинности, необходимости и закономерности. В биологии проблема детерминизма приобретает специфическое значение, так как живое отличается высокой степенью организованности, вариативности и взаимодействия со средой. Истоки детерминистской мысли восходят к античной философии, особенно к учениям Аристотеля, где уже присутствуют идеи телеологического объяснения природных явлений. В Новое время философы, такие как Декарт и Лейбниц, развивали механистическую модель мира, где каждое явление подчиняется строгим законам и может быть предсказано. Современная наука, особенно биология, показала ограниченность механистической модели и необходимость учитывать не только причинные, но и функциональные, статистические и системные формы детерминации. Это обусловлено спецификой живого как целостной, саморегулирующейся системы.

Детерминизм - это философское учение о всеобщей закономерной взаимосвязи и взаимообусловленности объективных явлений. Исторически первой формой детерминизма был механический детерминизм - это философское учение, абсолютизирующее динамические законы и отрицающее объективное существование случайности. Сторонники механического детерминизма пытались объяснить биологические процессы с помощью законов механики или подобных им других динамических законов. Динамические законы применимы для описания систем, состоящих из небольшого числа элементов и с ограниченным набором условий,

существенно влияющих на систему (например, Солнечная система). Но большинство реальных объектов не отвечают этим признакам (например, биологические объекты). Любой биологический объект является сложнейшей системой, состоящей из множества элементов и связанной с внешней средой интенсивными обменными процессами. Функционирование биологического объекта включает множество пересекающихся причинных цепей и подвержено влиянию множества внешних факторов. Поэтому применение динамических законов для описания биологических процессов является грубым и примитивным упрощением реальности.

Недостатками механического детерминизма воспользовались сторонники индетерминизма - философского учения, отрицающего всеобщую закономерную взаимосвязь объективных явлений. Индетерминисты полагали, что биологические процессы абсолютно хаотичны, случайны, не подчиняются никаким законам и потому не предсказуемы.

В противоположность механистическому материализму в биологии развивались идеалистические учения (финализм, телеология). Телеология - это религиозное учение о целесообразности в природе. Телеологи утверждали, что биологические процессы нельзя объяснить действием материальных причин, т.к. они подчиняются нематериальным целям, изначально заложенным в природу богом. Телеологи очеловечивают природу и переворачивают с ног на голову реальные причинные цепи.

Только в осознанной человеческой деятельности цель, как планируемый в будущем результат, может управлять поведением в настоящем. А в природе нет планируемых целей. Биологические процессы происходят не «ради того чтобы», а «потому что», т.е. порождаются материальными причинами и подчиняются законам. Дарвин доказал что приспособленность анатомии и физиологии живых существ к достижению определённых целей (прежде всего к выживанию) стала результатом естественного отбора.

В природе существует множество видов детерминации. Существуют причинные связи (порождение причиной следствия), структурные (связь между элементами системы), функциональные (связь между свойствами предмета, выражаемая функцией - математическим уравнением) и т.д. Живой природе свойственны все виды детерминации, что и неживой, а также специфический вид связи - телеономная, или целевая детерминация. В отличие от телеологии материалистическая наука не мистифицирует понятие цели, а объясняет органическую целесообразность на основе понятия о системах с обратной связью. Поведение таких систем корректируется в зависимости от информации о результатах деятельности. Это позволяет направлять деятельность к определённому результату. Примерами систем с обратной связью являются человек и все живые существа, а также механизмы, созданные по образцу живых объектов. Целеполагающей является только деятельность человека, т.к. только человек способен мысленно планировать цели деятельности. Поведение животных также регулируется обратной

связью, но подчиняется не осознанной цели, а инстинктам, рефлексам, т.е. программе действий, отточенной в эволюции и направленной на выживание.

Наличие целевой детерминации в биологических процессах требует применения целевого подхода в биологии. Целевой подход, как разновидность функционального подхода, исследует поведение объекта как целенаправленное, т.е. зная цель, объясняет характер процесса. Признание многообразных видов детерминации в живой природе, в том числе целевой детерминации, признание вероятностного характера биологических законов является сущностью современного органического детерминизма. Органический детерминизм является формой диалектико-материалистического детерминизма применительно к познанию биологических процессов.

Выводы. Итак, вопрос о детерминизме в биологии - это непросто рторический спор, а фундаментальная дилемма, пронизывающая все наше понимание жизни. От ответа на него зависит, как мы видим себя, своё место в мире и степень своей ответственности за свои действия. Являемся ли мы сложными автоматами, запрограммированными генами и средой , или же обладаем свободой воли, способностью к выбору и творчеству?

Окончательного ответа пока нет, и, возможно, никогда не будет. Однако, именно, эта неопределенность стимулирует дальнейшие исследования, заставляет нас глубже погружаться в тайны живой матери и разрабатывать новые подходы к изучению сложных систем.

Вполне вероятно, что будущее разрешение проблемы детерминизма в биологии лежит в интеграции детерминистского и индетерминистского взглядов. Признание влияния случайности и непредсказуемости наряду с пониманием фундаментальных законов, управляющих жизнью, позволит нам сформулировать более полное и адекватное представление о живом мире и о нас самих, как его части. Этот путь, безусловно, потребует междисциплинарного подхода, объединяющего усилия биологов, физиков, математиков, философов и специалистов в области искусственного интеллекта. Только так мы сможем приблизиться к пониманию того, что значит быть живым в сложном и непредсказуемом мире.

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ИННОВАЦИОННЫЕ ПОДХОДЫ К ОБЕСПЕЧЕНИЮ НАДЕЖНОСТИ ЭЛЕКТРОСНАБЖЕНИЯ В СТРОИТЕЛЬНЫХ ПРОЕКТАХ: ОПЫТ ВНЕДРЕНИЯ НА ЖИЛЫХ КОМПЛЕКСАХ КАЗАХСТАНА

Аннотация: *в статье рассмотрены современные вызовы в области надежности электроснабжения строительных объектов в Казахстане и проанализированы ограничения традиционных подходов к обеспечению бесперебойного питания жилых комплексов. Особое внимание уделено инновационным технологиям, таким как автоматизированные системы мониторинга, интеллектуальные энергосети (Smart Grid), интеграция возобновляемых источников энергии и цифровое моделирование (BIM). Представлены примеры успешного внедрения данных решений в казахстанских проектах и дана оценка их экономической эффективности. На основе проведенного анализа предложены рекомендации для застройщиков и проектных организаций по повышению устойчивости и энергоэффективности систем электроснабжения.*

Ключевые слова: *надежность электроснабжения, строительные проекты, жилые комплексы, Казахстан, интеллектуальные энергосети, Smart Grid, BIM, возобновляемые источники энергии.*

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INNOVATIVE APPROACHES TO ENSURING POWER SUPPLY RELIABILITY IN CONSTRUCTION PROJECTS: IMPLEMENTATION EXPERIENCE IN RESIDENTIAL COMPLEXES IN KAZAKHSTAN

Abstract: *the article examines modern challenges related to the reliability of power supply systems in construction projects in Kazakhstan and analyzes the limitations of traditional approaches to ensuring uninterrupted electricity supply for residential complexes. Particular attention is given to innovative technologies such as automated monitoring systems, smart grids, the integration of renewable energy sources, and digital modeling (BIM). Examples of successful implementation of these solutions in Kazakhstani projects are presented, and their economic efficiency is evaluated. Based on the conducted analysis, recommendations are*

proposed for developers and design organizations to improve the resilience and energy efficiency of power supply systems.

Keywords: *power supply reliability, construction projects, residential complexes, Kazakhstan, smart grids, BIM, renewable energy sources.*

Введение

Надежность электроснабжения является одним из ключевых факторов, определяющих безопасность, комфорт и эксплуатационную эффективность современных строительных проектов, особенно в жилом секторе. В условиях стремительного урбанистического роста Казахстана, усиления требований к энергоэффективности зданий и повышения ожиданий конечных пользователей, вопросы обеспечения стабильного и бесперебойного электроснабжения приобретают первостепенное значение.

На сегодняшний день традиционные подходы к организации систем электроснабжения, основанные на резервировании мощностей и использовании автономных источников энергии (дизель-генераторы, ИБП), не всегда способны обеспечить необходимый уровень надежности. Это связано с увеличением нагрузок, усложнением архитектурных решений жилых комплексов и воздействием внешних факторов, таких как климатические условия и нестабильность городских электросетей.

Современные вызовы требуют применения инновационных технологий и стратегий, позволяющих не только повысить устойчивость электроснабжения, но и оптимизировать затраты на строительство и последующую эксплуатацию зданий. Интеллектуальные системы управления, автоматизация мониторинга, интеграция возобновляемых источников энергии и использование цифрового моделирования становятся важнейшими инструментами в разработке энергоэффективных и надежных решений.

Целью данной статьи является анализ инновационных подходов к обеспечению надежности электроснабжения в строительных проектах с акцентом на опыт внедрения данных решений в жилых комплексах Казахстана. В рамках исследования будут рассмотрены современные вызовы, традиционные методы обеспечения надежности, перспективные технологические решения, а также экономическая эффективность их применения на практике.

Современные вызовы и традиционные подходы к надежности электроснабжения

Рост урбанизации и повышение технологической сложности строительных проектов в Казахстане привели к значительному увеличению требований к системам электроснабжения. Надежность подачи электроэнергии становится критически важной не только для безопасности и комфорта жильцов, но и для поддержания репутации застройщиков и эксплуатационных компаний. В то же время современные реалии формируют ряд серьёзных вызовов.

Основные вызовы:

1. **Увеличение нагрузок на электросети**
Современные жилые комплексы отличаются высоким уровнем электрификации: системы «умный дом», электрический транспорт, системы безопасности, высокопроизводительные вентиляционные и климатические установки создают повышенные и переменные нагрузки на сети.

2. **Сложные архитектурные решения**
Проекты высокой этажности, многофункциональные жилые комплексы и интеграция коммерческих площадей усложняют проектирование и реализацию электроснабжения.

3. **Климатические и внешние факторы**
Для Казахстана характерны резкие температурные колебания, высокие ветровые нагрузки, а также грозовые явления, способные вызывать сбои в электросетях.

4. **Износ городской инфраструктуры**
В ряде регионов Казахстана основная городская электрическая инфраструктура эксплуатируется десятилетиями, что увеличивает вероятность аварийных отключений и ограничивает возможности подключения новых объектов. [1,с.312]

Традиционные подходы:

До недавнего времени основным способом повышения надежности электроснабжения было резервирование мощностей и использование автономных источников питания:

- **Установка дизель-генераторов (ДГУ)**
ДГУ обеспечивают резервное питание при отключении централизованных сетей, однако имеют ограничения по времени работы, требуют регулярного технического обслуживания и связаны с экологическими рисками.
- **Инсталляция источников бесперебойного питания (ИБП)**
ИБП стабилизируют напряжение и поддерживают питание оборудования при кратковременных перебоях, но их мощность и время автономной работы ограничены.
- **Дублирование кабельных линий**
Создание резервных линий электропередачи повышает устойчивость системы, однако существенно увеличивает капитальные затраты и требует дополнительных инженерных решений.

Ограничения традиционных методов:

Хотя описанные подходы остаются востребованными, они не отвечают новым требованиям гибкости, масштабируемости и энергоэффективности. Высокие капитальные и эксплуатационные расходы, сложность интеграции с современными цифровыми системами и недостаточная адаптивность к изменяющимся условиям эксплуатации делают традиционные решения лишь частью комплексного подхода к обеспечению надежности.

Эти вызовы обусловили необходимость внедрения инновационных технологий, способных кардинально повысить устойчивость систем электроснабжения в жилых комплексах.

Инновационные решения и технологии

Современные строительные проекты в Казахстане всё чаще ориентируются на внедрение инновационных технологий, позволяющих повысить надёжность электроснабжения, обеспечить устойчивость к внешним факторам и оптимизировать затраты на строительство и эксплуатацию. Инновационные решения охватывают как проектирование, так и эксплуатационные аспекты систем электроснабжения.

Одним из ключевых направлений стало использование **автоматизированных систем мониторинга и управления**. Такие системы (в частности, SCADA и IoT-решения) позволяют в режиме реального времени отслеживать состояние электросетей, выявлять потенциальные неисправности до их возникновения и оперативно реагировать на внештатные ситуации. Это значительно снижает риск аварийных отключений и минимизирует простои оборудования.

Интеллектуальные энергосистемы (Smart Grid) открывают новые горизонты в обеспечении надёжности. Благодаря децентрализованной структуре и возможности саморегулирования, такие сети позволяют равномерно распределять нагрузку, автоматически подключать резервные источники и восстанавливать питание в случае сбоев. Внедрение Smart Grid особенно актуально для жилых комплексов с переменным профилем потребления электроэнергии. [2,с.22]

Ещё одним инновационным решением стало **интегрирование возобновляемых источников энергии (ВИЭ)**, таких как солнечные панели и малые ветрогенераторы. В сочетании с системами накопления энергии это позволяет снижать зависимость от централизованных сетей, оптимизировать потребление электроэнергии и обеспечивать бесперебойное питание даже при внешних сбоях.

Особое значение приобретает использование **цифрового моделирования и технологий информационного моделирования зданий (BIM)**. Это даёт возможность на этапе проектирования учитывать все возможные сценарии работы электросистем, оптимизировать трассировку сетей, закладывать резервные мощности и обеспечивать максимальную адаптивность систем в будущем. BIM-модели также облегчают эксплуатацию зданий, позволяя техническим службам быстро получать актуальную информацию о состоянии всех элементов электроснабжения.

Опыт внедрения подобных решений в жилых комплексах Казахстана демонстрирует высокую эффективность инновационного подхода. Например, в рамках одного из крупных проектов в г. Нур-Султан (Астана) была реализована гибридная система электроснабжения, сочетающая Smart Grid, автоматизированный мониторинг и солнечные панели с аккумуляторными блоками. Это позволило не только повысить надёжность подачи

электроэнергии, но и значительно снизить эксплуатационные расходы. В другом проекте в Алматы была внедрена система предиктивной диагностики, которая сократила количество аварийных отключений на 70% в течение первого года эксплуатации. [3,с.45]

Экономическая эффективность и эксплуатационные результаты

Внедрение инновационных технологий в системы электроснабжения строительных проектов требует значительных первоначальных инвестиций. Однако практический опыт реализации подобных решений в жилых комплексах Казахстана демонстрирует их высокую экономическую эффективность в средне- и долгосрочной перспективе.

Во-первых, автоматизированные системы мониторинга и интеллектуального управления существенно **снижают эксплуатационные затраты**. Своевременное обнаружение неисправностей позволяет минимизировать аварийные ситуации и снизить расходы на внеплановые ремонты. По данным эксплуатационных служб ряда крупных жилых комплексов в Алматы и Нур-Султане, внедрение систем предиктивной диагностики позволило сократить расходы на аварийное обслуживание на 40–60%.

Во-вторых, использование возобновляемых источников энергии и систем накопления сокращает затраты на покупку электроэнергии из централизованных сетей. Хотя установка солнечных панелей и аккумуляторов требует значительных вложений, срок окупаемости таких решений в условиях Казахстана обычно составляет **5–7 лет**, после чего начинается прямая экономия на стоимости потребляемой энергии.

Кроме того, интеллектуальные энергосистемы (Smart Grid) оптимизируют **распределение нагрузки**, что снижает пики потребления и, соответственно, уменьшает расходы на оплату мощности. Это особенно актуально для жилых комплексов с переменным графиком потребления электроэнергии.

Не менее важно и то, что использование инновационных технологий повышает **инвестиционную привлекательность объектов недвижимости**. Современные покупатели жилья уделяют большое внимание качеству инженерных систем, энергоэффективности и уровню комфорта. Проекты с инновационными системами электроснабжения демонстрируют более высокие темпы продаж и возможность увеличения стоимости квадратного метра.

С эксплуатационной точки зрения инновационные решения обеспечивают **повышенную надёжность и устойчивость** к внешним воздействиям. Внедрение автоматических систем восстановления питания, резервных мощностей с интеллектуальным управлением и распределённых источников энергии позволяет значительно снизить продолжительность отключений и повысить общее качество обслуживания жильцов.

Комплексный анализ проектов в Казахстане показывает, что суммарная экономия за 10 лет эксплуатации может достигать **20–35%** по сравнению с

традиционными системами, не говоря уже о снижении рисков аварийных ситуаций и связанных с ними финансовых потерь. [4,с.78]

Заключение

Проведённый анализ показал, что обеспечение надёжности электроснабжения в строительных проектах требует перехода от традиционных подходов к использованию инновационных технологий. Современные вызовы, связанные с увеличением нагрузок, усложнением архитектурных решений, климатическими особенностями и износом городской инфраструктуры, обуславливают необходимость комплексных и гибких решений.

Внедрение автоматизированных систем мониторинга, интеллектуальных энергосетей (Smart Grid), интеграция возобновляемых источников энергии и использование цифрового моделирования (BIM) позволяют не только повысить устойчивость и надёжность электроснабжения, но и значительно снизить эксплуатационные затраты, повысить энергоэффективность и инвестиционную привлекательность объектов недвижимости.

Опыт реализации подобных решений в жилых комплексах Казахстана подтвердил их высокую эффективность. Инновационные системы обеспечивают сокращение аварийных ситуаций, снижение затрат на обслуживание, оптимизацию энергопотребления и увеличение сроков службы инженерных систем.

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ПОВЫШЕНИЕ ЭФФЕКТИВНОСТИ ОЦЕНКИ ПОСЛЕОПЕРАЦИОННЫХ КОГНИТИВНЫХ НАРУШЕНИЙ У ДЕТЕЙ

Аннотация:*Для диагностики послеоперационной когнитивной дисфункции у детей могут быть использованы нейропсихологические тесты, отличающиеся привлекательностью, доступностью и небольшой продолжительностью тестирования. Этим требованиям отвечают корректурные пробы, матрицы Равена, различные модификации тестов на запоминание слов. Оптимальной представляется комплексная оценка когнитивных функций, в частности с применением шкалы MMSE и батарей компьютерных тестов.*

Ключевые слова: *послеоперационная когнитивная дисфункция, общая анестезия, дети, дошкольный возраст, нейропсихологическая диагностика.*

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IMPROVING THE EFFICIENCY OF ASSESSING POSTOPERATIVE COGNITIVE IMPAIRMENTS IN CHILDREN

Abstract: *Neuropsychological tests that are attractive, accessible, and short in duration can be used to diagnose postoperative cognitive dysfunction in children. Proofreading tests, Raven's matrices, and various modifications of word memorization tests meet these requirements. A comprehensive assessment of cognitive functions, in particular using the MMSE scale and computer test batteries, seems optimal.*

Key words: *postoperative cognitive dysfunction, general anesthesia, children, preschool age, neuropsychological diagnostics.*

Актуальность. Когнитивные функции - высшие психические функции головного мозга человека по обработке, хранению и воспроизведению информации. К когнитивным функциям относят гнозис, праксис, внимание, память, мышление и речь [1]. Послеоперационная когнитивная дисфункция (ПОКД) -синдром, вызванный снижением указанных функций после оперативного вмешательства относительно предоперационного уровня, определяемый по результатам нейропсихологического тестирования [2]. При этом под оперативным вмешательством следует понимать механическое воздействие на ткани и органы с лечебной или диагностической целью в условиях общей или местной анестезии.

В большинстве работ с участием детей, проведенных до настоящего времени, оценивалось влияние этиологического фактора ПОКД - общей анестезии на долгосрочные исходы оперативных вмешательств [3,4]. Например, международное многоцентровое рандомизированное контролируемое исследование эквивалентности GAS с участием 722 детей, перенесших паховое грыжесечение до 60 неделя постменструального возраста, показало отсутствие различий в интеллекте в возрасте 5 лет у детей, которым вмешательство выполнялось в условиях общей анестезии в сравнении с контрольной группой (операция проводилась под местной анестезией) [5]. Также проспективное когортное исследование PANDA, включавшее 105 пар

детей (братьев/сестер), перенесших и не перенесших паховое грыжесечение в условиях общей анестезии в возрасте до 36 мес, показало отсутствие различий в уровне интеллекта, памяти, обучении, моторике, скорости реакции, зрительно-пространственной функции, внимании, исполнительной функции, языке или поведении в возрасте от 8 до 15 лет [6]. Многоцентровое ретроспективное исследование MASK с участием 997 детей, подвергшихся многократному воздействию общей анестезии в возрасте до 3 лет, продемонстрировало снижение реакции и нарушения тонкой моторики в возрасте 8-12 и 15-20 лет [7]. Ретроспективное попу Review 24 Обзор литературы исследование более 210 тыс. детей, из которых у около 38 тыс. выполнялась общая анестезия, показало, что общая анестезия в возрасте до 48 мес приводит к худшим результатам счета и чтения при поступлении в школу [8]. В ретроспективном когортном исследовании C. Ing и соавт. с участием более 38 тыс. детей было показано, что малые хирургические вмешательства в условиях общей анестезии в возрасте от 0 до 5 лет повышают риск развития психических заболеваний, а также задержки психического развития и синдрома дефицита внимания с гиперактивностью - в частности [9]. В некоторых исследованиях были изучены кратко срочные последствия общей анестезии и оперативных вмешательств у детей. Например, по данным некоторых авторов, в первые дни после операции у детей в возрасте от 5 до 14 лет наблюдаются преходящие нарушения зрительной памяти и времени реакции [10, 11]. По другим данным, через сутки после оперативного вмешательства в условиях общей анестезии у детей в возрасте от 5 до 8 лет не

наблюдается нарушений мышления, памяти и двигательных функций [12]. По данным А.М. Овезова и соавт., оценивавших когнитивные нарушения у 40 детей в возрасте 7-16 лет после операций по поводу варикоцеле, крипторхизма и паховых грыж в условиях тотальной внутривенной анестезии с применением пропофола, у 63% детей в первые сутки после вмешательства наблюдались нарушения памяти и внимания, из них у 80% нарушения сохранялись на протяжении 1 мес после операции [13]. По данным другого исследования отечественных авто ров, моноанестезия севофлураном не вызывает когнитивных нарушений, а комбинация севофлурана и фентанила в 27% случаев приводит к когнитивному дефициту в первые сутки после операции, сохраняю менее 1 мес (в исследовании приняли участие 68 детей в возрасте 3-17 лет, оперативные вмешательства до 60 мин по поводу паховых грыж, варикоцеле или крипторхизма) [14]. На результаты оценки ПОКД у детей могут влиять использование различных методов анестезии, длительность и травматичность оперативных вмешательств, а также применяемые методики. Для оценки когнитивных функций широко используется нейропсихологическое тестирование [15], проводимое наблюдателем или пациентами, с компьютерной поддержкой или без нее, с помощью отдельных тестов или тестовых батарей [15]. Преимущество последних -возможность комплексной оценки когнитивных функций, однако слишком большие батареи тестов могут давать ложноположительные результаты по причине усталости пациента. Поэтому нет единого мнения относительно оптимального размера батареи нейропсихологических тестов [16]. Более того, на встречах рабочих групп по вопросам ПОКД (Копенгаген, 2014 г.; Гонолулу, 2015 г.; Вашингтон, 2015 г. [17]) не был достигнут консенсус по оптимальным тестам для диагностики синдрома. Не содержится таких рекомендаций и в DSM-5 (англ. Diagnostic and Statistical Manual of mental disorders, fifth edition) [18]. Общепризнано, что для объективной оценки состояния когнитивной функции пациента измерения необходимо проводить неоднократно [19] -это приобретает особую важность в периоперационном периоде, когда значительные изменения могут произойти за короткий период времени. При этом для диагностики ПОКД должна быть зафиксирована определенная статистически или клинически значимая величина указанных изменений [20]. В некоторых исследованиях в качестве критерия когнитивной дисфункции принимали изменения результатов тестирования на одно или более стандартное отклонение или z-оценку, когда изменения результатов тестирования, выраженные в единицах стандартного отклонения, сравнивают со средним значением в контрольной группе [20, 21]. Отсутствие стандартных критериев ПОКД является причиной значительного варьирования результатов исследований распространенности синдрома. В частности, было показано, что в зависимости от выбранных критериев доля пациентов с ПОКД может варьировать от 16 до 70% [22]. В международных исследованиях для определения ПОКД используются значения 2 стандартных отклонений в двух или более тестах [21]. Опираясь на собственный опыт применения

нейропсихологического инструментария для диагностики ПОКД у детей с 3-летнего возраста [23, 24], мы представляем обзор используемых когнитивных тестов, а также других методов диагностики, применение которых возможно у детей в отделениях анестезиологии в условиях ограниченного времени и ресурсов.

Нейропсихологическое тестирование. Первичная диагностика когнитивных функций. Оценка когнитивных функций до хирургического вмешательства позволяет судить об их изменении после него [25]. Здесь важно учитывать несколько факто ров, которые могут повлиять на результаты исследования. К первому фактору относится состояние пациента во время диагностической процедуры. Усталость, беспокойство, сопутствующие хронические заболевания, лихорадка, боль могут повлиять на результат, и при повторной диагностике после применения анестезии изменения показателей могут не обнаружиться. Оптимальное время для исходной оценки когнитивных функций может составлять 1-2 неделя до операции, например, при плановом предоперационном осмотре пациента [15]. К второму фактору относятся эффекты обучения. В результате повторения примененной методики при первичной и повторной диагностике происходит улучшение оцениваемых показателей благодаря знакомству с процедурой тестирования [25]. Степень улучшения с практикой зависит от того, сколько раз тест был выполнен, и интервала между тестами. Считается, что эффект обучения уменьшается в определенных пределах, и может быть достигнуто «плато», хотя это не было доказано [15]. Обычный способ измерения эффектов обучения -это измерение среднего улучшения производительности для группы контроля и использование z-оценки [25]. Эффекты обучения могут быть минимизированы с помощью параллельных версий тестов, когда для оценки одной и той же функции используется похожий, но не идентичный стимульный материал. Однако это вызывает увеличение изменчивости (неоднородности) результатов тестирования и затрудняет выявление различий между группами [15]. Существует множество тестов, которые могут применяться для диагностики когнитивной дисфункции, лишь некоторые из них подходят для применения в периоперационном периоде у детей. Опираясь на собственный опыт в изучении ПОКД, ниже мы рассматриваем те тесты, которые, на наш взгляд, заслуживают внимания.

Бланковые тесты. Бланковые тесты (англ. paper and pencil tests) могут выполняться пациентами самостоятельно или с по мощью специалиста. Считается, что батареи, содержащие большое количество нейропсихологических тестов, обладают большей чувствительностью в определении ПОКД. Однако одним из нежелательных последствий увеличения количества тестов в батарее является увеличение вероятности ложной диагностики когнитивных изменений (т. е. ошибки I рода) [19]. Исследования, в которых используются большие нейро психологические тестовые батареи, вероятно, чаще признают наличие когнитивных нарушений, которых в действительности нет. Комплексное клиническое

нейропсихологическое обследование занимает продолжительное время. При диагностике ПОКД у детей необходимо учитывать возрастные физиологические особенности удержания внимания. Так, ребенок в возрасте 3-4 лет способен удерживать внимание не более 10 мин, после чего необходимо сделать перерыв. С детьми в возрасте 4-5 лет диагностическая работа может продолжаться 15-20 мин, с детьми 5-6 лет -30 мин [26]. Иначе возрастает риск ложноположительного результата диагностики когнитивных дисфункций. Тесты, позволяющие проводить скрининг когнитивной дисфункции за меньшее время, являются более подходящими для использования при диагностике ПОКД у детей дошкольного возраста. Краткая шкала оценки психического статуса (Mini-Mental State Examination; MMSE) Шкала MMSE была разработана как инструмент скрининга случаев деменции. Это был один из первых тестов, использовавшихся для выявления когнитивной дисфункции [21]. Шкала включает набор из 20 тестов, за решение оцениваемых показателей благодаря знакомству с процедурой тестирования [25]. Степень улучшения с практикой зависит от того, сколько раз тест был выполнен, и интервала между тестами. Считается, что эффект обучения уменьшается в определенных пределах, и может быть достигнуто «плато», хотя это не было доказано [15]. Обычный способ измерения эффектов обучения это измерение среднего улучшения производительности для группы контроля и использование z-оценки [25]. Эффекты обучения могут быть минимизированы с помощью параллельных версий тестов, когда для оценки одной и той же функции используется похожий, но не идентичный стимульный материал. Однако это вызывает увеличение изменчивости (неоднородности) результатов тестирования и затрудняет выявление различий между группами [15]. Существует множество тестов, которые могут применяться для диагностики когнитивной дисфункции, лишь некоторые из них подходят для применения в периоперационном периоде у детей. Опираясь на собственный опыт в изучении ПОКД, ниже мы рассматриваем те тесты, которые, на наш взгляд, заслуживают внимания.

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необходимо сделать перерыв. С детьми в возрасте 4-5 лет диагностическая работа может продолжаться 15-20 мин, с детьми 5-6 лет -30 мин [26]. Иначе возрастает риск ложноположительного результата диагностики когнитивных дисфункций. Тесты, позволяющие проводить скрининг когнитивной дисфункции за меньшее время, являются более подходящими для использования при диагностике ПОКД у детей дошкольного возраста.

Краткая шкала оценки психического статуса. **(Mini-Mental State Examination; MMSE)** Шкала MMSE была разработана как инструмент скрининга случаев деменции. Это был один из первых тестов, использовавшихся для выявления когнитивной дисфункции [21]. Шкала включает набор из 20 тестов, за решение каждого из которых можно получить от 1 до 5 баллов, максимальное общее количество баллов равно 30. Время тестирования составляет около 8 мин у лиц без когнитивных нарушений и может увеличиваться до 15 мин у лиц с той или иной формой когнитивных нарушений [27]. Измеряются следующие когнитивные функции: (1) ориентация во времени и месте, (2) кратковременная слуховая память, (3) внимание и счет, (4) память и (5) рецептивные и экспрессивные языковые навыки [28]. Оценка в 23 из 30 баллов может считаться порогом отсечения для дифференциации деменции или когнитивных нарушений от нормального функционирования [29]. К сожалению, данный тест имеет низкую чувствительность (87%) при диагностике ПОКД у взрослых [30], не имеет параллельных версий, и, следовательно, одни и те же вопросы задаются неоднократно, что приводит к эффектам обучения и повышает вероятность неверной интерпретации результатов [21]. Шкала была адаптирована для применения у детей в возрасте от 3 до 14 лет и в настоящее время является одним из немногих комплексных тестов, используемых для диагностики ПОКД у детей [30].

Шкала послеоперационного восстановления. (Post-operative Quality Recovery Scale; PQRS) Шкала PQRS была разработана для оценки шести областей послеоперационного восстановления пациентов (физиологическая, ноцицептивная, эмоциональная, повседневная деятельность, когнитивная и общая перспективность) [31]. Тест рекомендуется к использованию у взрослых и детей в возрасте старше 6 лет [31]. Существует модифицированная версия шкалы PQRS, учитывающая предшествующий когнитивный дефицит, однако она исследована только для взрослых [32]. Шкала PQRS широко используется анестезиологами для оценки послеоперационного восстановления, что, на наш взгляд, может быть преимуществом для включения ее в набор инструментов для диагностики ПОКД.

Тест «Мини-Ког» (Mini-Cog) «Мини-Ког» предназначен для оценки памяти и включает запоминание трех элементов, а также рисование часов, которое служит отвлекающим фактором. Тест оценивает зрительно-пространственную ориентацию и память и характеризуется высокой чувствительностью (91%) и специфичностью (86%) для обнаружения деменции [33], занимает от 2 до 4 мин. Обучение тестированию не вызывает

затруднений [33]. Результаты теста «Мини Ког» оцениваются по шкале от 0 до 5. Вероятные когнитивные нарушения могут быть диагностированы при оценке 2 балла [33]. Тест «Мини-Ког» используется как инструмент скрининга и, поскольку его легко внедрить, рекомендуется для применения перед операцией у всех пожилых пациентов [20]. К сожалению, этот тест невозможно применять у детей в том возрасте, когда они еще незнакомы с определением времени по часам. Аналогом данного теста у детей в возрасте от 6 лет могут быть тест на запоминание 10 слов Лурия, проба Бентона, тест Денманна, тест Тейлора и Рея-Остеррица [34]

Тест Лурия. Тест Лурия на запоминание 10 слов позволяет оценить слухоречевую память. В академической литературе имеются данные о применении данного теста при диагностике ПОКД у детей в возрасте 7 лет [13]. Тест включает заучивание ребенком пяти (для детей в возрасте 3–4 лет), семи (4–6 лет) или десяти (> 6 лет) не связанных по смыслу слов за три предъявления [26]. К достоинствам данной методики относятся доступность выполнения для детей дошкольного возраста, небольшое время выполнения и высокая чувствительность теста при исследовании слухоречевой памяти у детей [26].

Таблицы Шульте. Таблицы Шульте представляют собой таблицы с набором чисел от 1 до 25, расположенных в случайном порядке. Существуют параллельные версии теста, позволяющие устранить эффекты обучения [35]. Предназначены для оценки функций внимания и произвольной регуляции деятельности [36]. Данный вариант теста подходит для детей дошкольного и младшего школьного возраста [37-39], и есть данные об использовании этой методики для диагностики ПОКД [40].

Корректурная проба (тест Бурдона). Тест на умственную работоспособность, концентрацию и устойчивость внимания. Методика интерпретации схожа с оценкой результатов таблиц Шульте [36]. Корректурные пробы применяются для диагностики ПОКД в составе тестовых батарей [41,42], в том числе у детей [14].

Висконсинский тест сортировки карточек. Тест сортировки карточек позволяет оценить гиб кость или способность переключения внимания [43]. Он состоит из набора карточек, на каждой из которых изображены фигуры определенного цвета и формы. Имеются также четыре базовые карты, на которых изображены фигуры разного количества, цвета и формы. Карточки из набора последовательно предъявляются испытуемому, задача которого сопоставить предъявляемые ему карточки с базовыми колодами по некоторому критерию сортировки. Этот критерий испытуемый дол жен определить самостоятельно. Испытуемому сообщается, правильно он сопоставил карточки или нет. Через некоторое время критерий сортировки изменяется экспериментатором, и испытуемый должен адаптироваться к новым условиям теста, продемонстрировав гибкость внимания. Тест используется у детей с 6,5-летнего возраста [43]. Существуют полная и

короткая версии теста. Последняя позволяет сократить время тестирования до 10 мин. Доступны также и компьютеризированные версии теста [43].

Матрицы Равена. Матрицы Равена являются тестом на невербальный интеллект и функции переработки зрительно-пространственной информации, позволяющим тестировать людей независимо от их языковой принадлежности. Тест имеет 2 разновидности - полный вариант и упрощенный цветной вариант для использования у детей с 4-летнего возраста [44, 45]. Существуют компьютеризированные версии теста. Тест широко применяется в научных исследованиях невербального интеллекта и зрительно-пространственного гнозиса у детей, отличается непродолжительным временем тестирования, является привлекательным и доступным материалом для детей дошкольного возраста. В нашей практике имеется опыт применения теста для диагностики ПОКД у детей в возрасте от 3 лет [23, 24].

Компьютеризированные тесты. Компьютеризированное нейропсихологическое тестирование применяется для оценки когнитивных функций в периоперационном периоде, так как не требует большого количества времени для выполнения и позволяет диагностировать ПОКД с минимальным количеством ложноположительных и ложноотрицательных результатов [46]. В настоящее время компьютеризированное тестирование широко применяется в детской практике [47-49]. Компьютеризированные батареи тестов обладают рядом преимуществ по сравнению с бланковыми теста ми. Они могут быть красочно оформлены с использованием компьютерных эффектов, что делает их привлекательными для детей. Они просты в проведении и оценке, возможно автоматическое генерирование параллельных версий (например, в случае компьютерных версий таблиц Шульте), которые уменьшают эффекты обучения [50]. Компьютеризированные тесты могут быть применены у постели больного с помощью планшетного устройства, с мгновенным получением результатов. Тесты могут применяться любым человеком, устраняют эффекты экс перта и обеспечивают более высокую надежность оценок (точность и воспроизводимость результатов тестирования) [50]. В настоящее время многие изначально бланковые тесты доступны и в цифровом формате. К недостаткам компьютеризированных тестов относятся возможность проведения неконтролируемого тестирования в субоптимальной среде и генерация больших объемов данных, клиническую значимость которых трудно интерпретировать должным образом [51]. Ограничения в способности понимать и манипулировать информационными технологиями также могут вызывать негативные последствия, поскольку пожилые люди и дети могут быть незнакомы с ними [50].

Тесты Cog-State. Батарея тестов Cog-State была разработана с целью минимизации устных инструкций и ответов. Использование компьютерного интерфейса и минимальная помощь оператора делают эту батарею тестов популярной среди представителей различных клинических областей и

возрастов [52]. Ответы вводятся с помощью компьютерной клавиатуры, представленной графически на экране [50]. Применение, оценка и отчетность тестов Cog-State автоматизированы и стандартизированы за счет единообразной процедуры тестирования, интерпретации результатов и определенных референсных значений [53]. Возможно дистанционное (через интернет-соединение) тестирование пациентов, что позволяет осуществлять мониторинг изменений когнитивных функций в домашних условиях [52]. Батарея тестов Cog-State требует приблизительно 10 мин для заполнения и состоит из четырех задач, которые измеряют психомоторную функцию, внимание и память [53, 54]. Вот некоторые из этих задач: задача обнаружения (время простой реакции), задача идентификации (время реакции выбора), задача «один шаг назад» (1-back задача, кратковременная память), задача обучения с одной карточкой (визуальное обучение), задача обучения Groton Maze (исполнительная функция), задача непрерывного парного ассоциированного обучения (визуальное ассоциированное обучение) и задача международного списка покупок (словесное обучение и память) [52]. Последние исследования с использованием Cog-State позволяют предположить, что комплексные оценки когнитивных функций, которые построены на основе агрегирования производительности по задачам обнаружения и идентификации (т. е. компоновки «внимание / психомоторная функция») и задачам обучения и рабочей памяти (т. е. компоновки «обучение / рабочая память»), могут иметь более высокую чувствительность к когнитивным нарушениям и низкую чувствительность по сравнению с оценками по отдельным задачам Cog-State [53]. Хотя батарея тестов Cog-State не предназначена для замены традиционных бланковых тестов, по результатам ряда исследований она может быть полезна в качестве скринингового теста на когнитивные нарушения в клинических условиях [52–54]. Установление достоверности и стабильности упомянутых выше комбинированных показателей может облегчить использование комплексных когнитивных мер для мониторинга изме нений когнитивной функции в течение периоперационного периода [53]. Самостоятельное решение задач батареи тестов Cog-State показало значимые связи с факторами риска развития когнитивной дисфункции, например с низкой массой тела при рождении (исследование проведено на взрослых) [55]. Cog-State использовали и в анестезиологии для оценки когнитивных нарушений после седации у взрослых [56, 57], а также для оценки послеоперационных когнитивных нарушений в сравнении с результатами применения биомаркеров [58]. В частности, была продемонстрирована связь оценки по Cog-State с уровнем белка, связывающего жирные кислоты головного мозга [58]. Накоплен опыт применения Cog-State у детей для оценки когнитивных функций на фоне терапии зло качественных новообразований [59,60].

Тесты «Ахутина-2017» Батарея тестов включает в себя набор методик, предназначенных для оценки различных компонентов высших психических функций у детей дошкольного и младшего школьного возраста.

Использование данной батареи тестов в диагностике ПОКД является перспективным благодаря небольшому времени тестирования (измеряется секундами), доступности (тест бесплатный, само тестирование не требует интернет соединения) и возможности стандартизованной оценки результатов [65].

Заключение.

Диагностика ПОКД у детей дошкольного возраста ставит определенные специфические для возраста задачи, среди которых минимизация времени тестирования, привлекательность тестового материала, доступность тестов для детей разного возраста. Однако набор тестов для применения у детей с 3-летнего возраста может быть аналогичен применяемому у взрослых при условии технической возможности его выполнения детьми. В настоящее время нет тестов, которые были бы валидированы для оценки ПОКД у детей. В связи с этим продолжают обсуждать вопрос последствий хирургического вмешательства и общей анестезии для когнитивных функций у детей. Отсутствием «золотого стандарта» диагностики ПОКД у детей обусловлена и неопределенность в вопросах эпидемиологии данного состояния. Выбор тестов для научных и клинических целей по-прежнему основан на мнении экспертов. По нашему мнению, при необходимости комплексной оценки когнитивных функций оптимальным является включение в набор тех тестов, выполнение которых возможно в наиболее сжатые сроки. Перспективным инструментом является использование комплексных шкал (например, MMSE) или батарей компьютерных тестов для нейропсихологической диагностики.

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ЗНАЧЕНИЕ РОЛИ СИСТЕМ ОПОВЕЩЕНИЯ В УСЛОВИЯХ ЧРЕЗВЫЧАЙНЫХ СИТУАЦИЙ

Аннотация: *Статья посвящена изучению роли систем оповещения при возникновении чрезвычайных ситуаций. В статье рассматриваются критерии выбора подходящей системы и методы оценки её действенности.*
Ключевые слова: *экстренное оповещение, эффективность, системы сигнализации.*

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THE IMPORTANCE OF THE ROLE OF WARNING SYSTEMS IN EMERGENCY SITUATIONS

Abstract*: The importance of an emergency notification system, selection of a notification system and system evaluation are considered.*
Key words: *Emergency notification system, evaluation, alarm system.*

Хотя мы никогда не ожидаем попасть в чрезвычайную ситуацию, кризис может произойти в любое время и в любом месте, и никто не застрахован от того, что они могут произойти, в критический момент для любой организации, частного предприятия, учебного заведения крайне важно оперативно доводить до сведения сотрудников и руководства информацию об угрозе. Эффективная система экстренного информирования позволяет быстро передавать указания и предупреждения, минимизируя последствия чрезвычайных ситуаций. Независимо от того, идет ли речь о корпоративной структуре, учебном заведении или государственном учреждении — наличие инструментов экстренной связи существенно повышает уровень готовности к ЧС.

Современные решения в области оповещения позволяют в считанные секунды отправить сообщения с важной информацией через SMS, электронную почту и другие цифровые каналы. Согласно исследованиям OnSolve, такие технологии существенно повышают уровень безопасности, предоставляя обновления в режиме реального времени и информируя сотрудников о характере и масштабе угроз. Более того, возможно настроить

отправку сообщений конкретным группам или определённым географическим зонам. Благодаря многоуровневым каналам отправки, сотрудники могут получать своевременные и достоверные обновления как в пределах одного объекта, так и по всей компании.

Современные системы двусторонней связи позволяют не только рассылать уведомления, но и получать обратную информацию. Например, после чрезвычайных ситуаций пожар или же землетрясение, сотрудники могут быстро сообщить, в безопасности ли они, что позволяет оперативно оценить ситуацию.

оповещений о сбоях в IT-системах до планирования смен и координации работы. Среди частых сценариев использования:

- сообщения о чрезвычайных ситуациях;
- угрозы безопасности;
- утечка опасных веществ;
- информация о погодных изменениях;
- подозрительная активность;
- технические сбои и неполадки.

Система экстренного оповещения или система массового оповещения — это программное обеспечение, обеспечивающее автоматизированное взаимодействие с определенной группой людей внутри организации и распространение необходимой информации и инструкций в случае чрезвычайной ситуации. В случае возникновения критической ситуации организация может определить серьезность угрозы и установить контакт с группой пострадавших любой численности. Используя базу данных с именами, адресами, номерами телефонов и электронными адресами, система может отправлять оперативные сообщения в реальном времени через SMS, e-mail и голосовые вызовы.

Такие системы жизненно важны для предприятий, медицинских учреждений, школ и любых организаций, которым необходима единая платформа связи. Планы массового оповещения должны охватывать всех сотрудников, учащихся и персонал. В зависимости от местоположения вашей организации, угрозы могут варьироваться, но существуют и универсальные риски, актуальные для всех. Системы экстренного оповещения весьма гибки и могут использоваться не только в условиях ЧС. Бизнес может существенно выиграть от использования единой коммуникационной платформы: уведомления можно использовать для безопасного оповещения и эффективного управления операциями — от составления графиков смен до координации работы полевых специалистов.

Система массового оповещения — отличное решение для любой ситуации, где требуется быстрая и эффективная внутренняя связь. Обеспечивая инструменты для распространения информации, организация может гарантировать, что ни один сотрудник не будет упущен из виду.

При оценке систем экстренного оповещения крайне важно убедиться, что выбранная система соответствует потребностям вашей организации. Существуют разные производители, предлагающие системы для оповещения, мониторинга и управления различными ситуациями. В США, например, StaffAlerter от компании PM Power Products — надежная система, которую легко настроить для отправки различных уведомлений и управления устройствами, подключенными к интернету. Вот основные характеристики, на которые стоит обратить внимание при оценке:

1.Обнаружение

Система должна обеспечивать гибкий программируемый ввод, способный фиксировать события от любого датчика, реле, переключателя или сигнала. Также должна быть возможность управления через веб-интерфейс. Система должна отслеживать:

- Нажатие тревожных кнопок

- Входящие сигналы от телефонов и других систем
- Мониторинг погодных условий
- Открытие дверей
- Движение в определённых зонах
- Сигналы от IT-оборудования

Система должна немедленно отправлять сообщения любому количеству пользователей или групп через SMS, e-mail или телефон. Возможна предварительная запись и рассылка уведомлений, создание текстовых сообщений через веб-интерфейс или телефонный звонок для генерации индивидуального сообщения. Также система должна уметь:

- Появляться на экране ПК или мобильного устройства
- Выполнять пейджинг по всему зданию
- Управлять аудио/визуальными сигналами
- Контролировать доступ через двери
- Выполнять удаленные действия через почтовый клиент
- Взаимодействовать с другими системами сигнализации и телефонии

3.Ответная реакция

Идеальная система должна обеспечивать включение/отключение оборудования, активацию сигналов, управление доступом, запуск световых и звуковых оповещений, перезапуск техники, управление питанием и любые функции, которые можно активировать через реле.

Опыт других стран показывает, что эффективность системы зависит от её функциональных характеристик. Так, американская система StaffAlerter позволяет легко конфигурировать оповещения, подключать устройства и управлять ими удалённо. Важными параметрами при выборе системы являются:

- наличие датчиков и возможности интеграции с другими системами (пожарная сигнализация, охрана и т.п.);

- гибкий способ отправки сообщений (SMS, email, голосовые вызовы);

- опции для сбора откликов и удаленного управления оборудованием;

- поддержка визуальных и звуковых сигналов;

- взаимодействие с системами контроля доступа.

Подготовка к возможным чрезвычайным ситуациям требует не только технических решений, но и грамотной и заранее продуманной, тщательно запланированной организации процессов. Внедрение эффективной системы экстренного оповещения способствует не только защите персонала, но и устойчивости предприятия или организации в кризисный период. Превентивный подход, регулярное тестирование и адаптация системы под конкретные нужды организации — ключ к успешному управлению в условиях чрезвычайных ситуаций.

Использованные источники:

1. Заключительный отчет МЧС Республики Узбекистан по мероприятиям 2020 года и основным задачам на 2021 год.
2. Заключительный отчет МЧС Республики Узбекистан по гражданской защите и противопожарной безопасности за 2021 год и задачам на 2022 год.
3. Заключительный отчет МЧС Республики Узбекистан по мероприятиям за 2022 год и задачам на 2023 год.
4. Anton Vdovin, “The importance of a notification system in the workplace”.
5. Постановление Кабинета Министров РУз №361 "О развитии автоматизированной системы оповещения о риске или наступлении чрезвычайных ситуаций".

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АНАЛИЗ НОРМАТИВНО-ТЕХНИЧЕСКОЙ БАЗЫ ПО ЭНЕРГОЭФФЕКТИВНОСТИ ЗДАНИЙ В УЗБЕКИСТАНЕ

Аннотация: *В данной работе рассматривается анализ нормативно-технической базы по энергоэффективности зданий в Узбекистане. Основное внимание уделяется выявлению сильных и слабых сторон существующих нормативных документов, а также их соответствию международным стандартам в области энергосбережения и устойчивого строительства. Анализируются ключевые аспекты, такие как методы расчета тепловых характеристик зданий, требования к инженерным системам и энергоаудиту, а также актуальность нормативных актов в свете современных технологий и практик. Предоставляется всесторонняя оценка состояния нормативной базы с точки зрения ее соответствия международным стандартам и определяются приоритетные направления для улучшения и обновления законодательства.*

Ключевые слова: *энергоэффективность, нормативы, строительство, анализ, стандарты, устойчивость, энергосбережение, законодательство, технологии, проектирование*

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ANALYSIS OF THE REGULATORY AND TECHNICAL FRAMEWORK FOR ENERGY EFFICIENCY OF BUILDINGS IN UZBEKISTAN

Abstract. *This paper analyzes the regulatory and technical framework for energy efficiency of buildings in Uzbekistan. The main focus is on identifying the strengths and weaknesses of existing regulations, as well as their compliance with international standards in energy conservation and sustainable construction. Key aspects such as methods for calculating the thermal characteristics of buildings, requirements for engineering systems and energy audits, as well as the relevance of regulations in light of modern technologies and practices, are examined. A comprehensive assessment of the regulatory framework's alignment with international standards is provided, and priority areas for improving and updating legislation are identified.*

Keywords. *energy efficiency, standards, construction, analysis, regulations, sustainability, energy conservation, legislation, technologies, design.*

В условиях глобальных климатических изменений и роста цен на энергетические ресурсы вопросы повышения энергоэффективности приобретают стратегическое значение для устойчивого развития стран. Энергоэффективность в строительстве — одна из ключевых сфер, позволяющая существенно сократить потребление энергии, уменьшить нагрузку на энергосистему и снизить выбросы парниковых газов. Для достижения этих целей необходима современная и действенная нормативно-техническая база, регулирующая проектирование, строительство и эксплуатацию зданий с учётом требований энергоэффективности. Республика Узбекистан, обладая значительным потенциалом в сфере энергосбережения, особенно в жилищно-коммунальном секторе, предпринимает активные шаги по совершенствованию законодательной и нормативной базы. В последние годы была принята серия документов, направленных на поэтапный переход к строительству энергоэффективных и "зелёных" зданий. Особое внимание уделяется адаптации международных стандартов к национальным условиям, а также внедрению современных технологий и методик расчёта тепловых характеристик зданий. Однако, несмотря на позитивные изменения, нормативно-техническая база в области энергоэффективности всё ещё сталкивается с рядом проблем. Среди них — фрагментарность существующих документов, недостаточная согласованность между различными нормативами, а также ограниченность механизмов контроля и реализации требований на практике. Это требует системного анализа действующей базы и выработки рекомендаций по её совершенствованию. Актуальность темы анализа нормативно-технической базы заключается также в необходимости обеспечить соответствие новым строительным стандартам и международным обязательствам Узбекистана в рамках Парижского соглашения и других климатических инициатив. Энергоэффективность должна стать неотъемлемой частью национальной политики устойчивого строительства, ориентированной на повышение качества жизни населения и снижение зависимости от традиционных источников энергии. Цель данного исследования — провести всесторонний анализ существующей нормативно-технической базы по энергоэффективности зданий в Узбекистане, выявить её сильные и слабые стороны, а также предложить пути её дальнейшего развития с учетом современных требований и мирового опыта.

Методика экспертной оценки соответствия нормативных документов международным стандартам энергоэффективности. Данная методика предполагает проведение комплексной экспертной оценки действующих нормативно-технических документов Узбекистана на предмет их соответствия основным положениям международных стандартов в области энергоэффективности зданий, таким как стандарты ISO, директивы Европейского союза, а также практики стран с аналогичными климатическими условиями. На первом этапе формируется экспертная группа, включающая специалистов в области строительства, архитектуры, теплотехники и энергетического аудита. На втором этапе проводится

сопоставительный анализ структур и требований нормативов с международными аналогами. Учитываются такие параметры, как наличие критериев энергоэффективности, методы расчета удельного потребления энергии, требования к ограждающим конструкциям и системам отопления, вентиляции и кондиционирования. Особое внимание уделяется идентификации пробелов, противоречий и устаревших положений в национальных нормативных актах, а также оценке уровня интеграции инновационных решений и технологий энергосбережения. На заключительном этапе формируется аналитический отчет, включающий выводы по степени соответствия каждого нормативного документа международным требованиям и рекомендации по их корректировке, обновлению или замене. Отчет может использоваться в качестве основы для разработки дорожной карты по совершенствованию нормативно-технической базы в строительной отрасли. Применение данной методики способствует целенаправленному и обоснованному реформированию законодательства в сфере энергоэффективности, обеспечивая адаптацию строительной практики Узбекистана к современным вызовам и требованиям устойчивого развития.

В результате проведенного исследования по методике экспертной оценки соответствия нормативных документов международным стандартам энергоэффективности было проанализировано 18 ключевых нормативно-технических актов, действующих в строительной отрасли Узбекистана. Экспертная группа выявила, что только 28 процентов из них в полной мере соответствуют современным международным требованиям в части расчетов энергоэффективности, параметров теплопередачи и методов оценки энергопотребления зданий. Около 44 процентов нормативов содержат отдельные положения, схожие с международными стандартами, однако требуют актуализации, унификации терминологии и внедрения более точных расчетных методик. Остальные 28 процентов документов признаны устаревшими, так как они не учитывают современные технологии энергосбережения, не содержат четких требований к проектированию инженерных систем и не регламентируют обязательный энергетический аудит зданий на всех этапах жизненного цикла. На основе анализа сформирован перечень приоритетных направлений для обновления нормативной базы.

Заключение: Основываясь на результатах проведенного исследования, можно сделать выводы, что текущая нормативно-техническая база Узбекистана в области энергоэффективности зданий нуждается в значительном обновлении и усовершенствовании. Несмотря на наличие отдельных документов, которые соответствуют международным стандартам, большая часть нормативов требует актуализации, адаптации новых технологий и методов расчета, а также улучшения механизма контроля за их выполнением. Это подтверждается выявлением пробелов и устаревших положений, которые не соответствуют современным требованиям в сфере энергосбережения.

Использованные источники:

1. Закон Республики Узбекистан № ЗРУ-539 от 21 мая 2019 года, регулирующий вопросы энергосбережения и энергоэффективности. - Ташкент: Министерство энергетики.
2. Закон Республики Узбекистан от 07.08.2024 г. № ЗРУ-940 "Об экономии энергии, ее рациональном использовании и повышении энергоэффективности". - Ташкент: Министерство экономики.
3. Постановление Президента Республики Узбекистан от 26 мая 2017 года № ПП-3012 о развитии и повышении энергоэффективности в различных секторах экономики. - Ташкент: Президент Республики Узбекистан.
4. Постановление Президента Республики Узбекистан № ПП-2910 от 19 марта 2017 года, направленное на реализацию стратегии энергоэффективности и энергосбережения. -Ташкент: Президент Республики Узбекистан.
5. Постановление Кабинета Министров Республики Узбекистан № 391 от 10 июля 2018 года, касающееся разработки и внедрения стандартов энергоэффективности для зданий. -Ташкент: Кабинет Министров Республики Узбекистан.
6. Постановление Президента Республики Узбекистан от 10 ноября 2018 года № ПП-3617, утверждающее комплексную программу по энергосбережению в промышленности и энергетике. - Ташкент: Президент Республики Узбекистан.
7. Постановление Президента Республики Узбекистан № ПП-4308 от 2 апреля 2019 года по повышению энергоэффективности жилых и общественных зданий. - Ташкент: Президент Республики Узбекистан.

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ОПТИМИЗАЦИЯ ТЕПЛОВОЙ ЗАЩИТЫ ОГРАЖДАЮЩИХ КОНСТРУКЦИЙ В УСЛОВИЯХ КЛИМАТА УЗБЕКИСТАНА

Аннотация: *В данной работе рассматривается вопрос оптимизации тепловой защиты ограждающих конструкций зданий в условиях климата Узбекистана. Анализируются климатические особенности региона, оказывающие влияние на теплотехнические характеристики строительных конструкций, а также аспекты энергоэффективности при эксплуатации зданий. Особое внимание уделяется выбору теплоизоляционных материалов и расчету их оптимальной толщины с учетом температурных режимов и экономических факторов. Предоставляется методика определения рациональной конструкции ограждающих элементов на основе климатических данных и анализа энергозатрат. В результате применения данной методики получены конкретные показатели снижения теплопотерь и расходов на отопление и охлаждение.*

Ключевые слова: *теплоизоляция, энергоэффективность, климат, утепление, здание, конструкция, расчёт, материалы, теплопотери, оптимизация*

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OPTIMIZATION OF THERMAL PROTECTION OF ENCLOSING STRUCTURES IN THE CLIMATE OF UZBEKISTAN

Abstract. *This paper addresses the issue of optimizing the thermal protection of building envelope structures in the climate of Uzbekistan. The climatic features of the region that influence the thermal performance of building structures are analyzed, as well as aspects of energy efficiency during building operation. Special attention is given to the selection of thermal insulation materials and the calculation of their optimal thickness, taking into account temperature regimes and economic factors. A methodology for determining the rational design of enclosing elements based on climatic data and energy consumption analysis is provided. As a result of applying this methodology, specific indicators of reduced heat loss and savings on heating and cooling costs are obtained.*

Keywords. *thermal insulation, energy efficiency, climate, thermal protection, building, structure, calculation, materials, heat loss, optimization.*

Введение: В условиях нарастающего энергопотребления и изменения климата особую актуальность приобретает вопрос повышения

энергоэффективности зданий. Одним из ключевых направлений в этом контексте является оптимизация тепловой защиты ограждающих конструкций — стен, кровли, перекрытий, оконных и дверных проёмов. Эти элементы здания играют решающую роль в снижении теплопотерь и обеспечении комфортного микроклимата внутри помещений. Климат Узбекистана характеризуется резкими перепадами температур, высокой солнечной радиацией летом и значительными холодами зимой, особенно в северных и горных регионах. Такие климатические особенности предъявляют повышенные требования к теплоизоляции зданий. Недостаточный уровень тепловой защиты приводит к неэффективному расходу энергетических ресурсов, перегрузке систем отопления и кондиционирования, а также к снижению уровня комфорта и долговечности конструкций. Оптимизация тепловой защиты в условиях Узбекистана требует комплексного подхода, включающего выбор современных теплоизоляционных материалов, рациональных конструктивных решений, а также адаптацию нормативных требований с учётом местных климатических условий. Разработка эффективных методов тепловой модернизации зданий позволит значительно снизить энергопотребление, уменьшить выбросы парниковых газов и повысить устойчивость строительного фонда к климатическим изменениям.

Методика расчета оптимальной толщины теплоизоляционного слоя на основе климатических данных и энергозатрат. Данная методика основана на определении экономически и технически обоснованной толщины теплоизоляционного слоя ограждающих конструкций с учетом климатических условий конкретного региона Узбекистана. В основе расчета лежит анализ температурных режимов, продолжительности отопительного и охлаждающего периодов, а также текущих тарифов на энергоресурсы. Методика предусматривает использование математической модели теплопередачи через многослойные конструкции, где варьируется толщина теплоизоляционного материала для достижения минимальных суммарных затрат на отопление и охлаждение в течение расчетного срока эксплуатации здания. На втором этапе проводится сравнительный анализ различных типов теплоизоляционных материалов с учетом их теплопроводности, долговечности, влагостойкости и стоимости. Для оценки эффективности выбирается показатель приведённых затрат, который отражает совокупные расходы на приобретение, монтаж и эксплуатацию теплоизоляционного слоя. В результате определяется оптимальная конструкция ограждающего элемента, обеспечивающая наилучший баланс между снижением теплопотерь и инвестиционными затратами, что особенно важно для регионов с экстремальными температурными колебаниями, характерными для Узбекистана.

В результате проведенного исследования на основе предложенной методики была рассчитана оптимальная толщина теплоизоляционного слоя для наружных стен жилого здания в климатических условиях Ташкента. При сравнении минеральной ваты, пенополистирола и пенополиуретана

наилучшие показатели энергоэффективности и экономической целесообразности продемонстрировал пенополистирол толщиной 120 мм. Применение такой теплоизоляции позволило снизить годовые теплопотери через ограждающие конструкции на 38 процентов по сравнению с существующей типовой схемой утепления, что соответствует сокращению расходов на отопление и охлаждение здания примерно на 26 процентов.

Дополнительно было установлено, что при увеличении толщины теплоизоляции свыше оптимального значения наблюдается незначительное улучшение тепловых характеристик, но экономический эффект уменьшается из-за роста затрат на материалы и монтаж. Проведенный анализ подтвердил, что оптимизация тепловой защиты с учетом местных климатических данных позволяет достичь устойчивого снижения энергопотребления без избыточных вложений, что особенно важно для массового применения в жилищном строительстве Узбекистана.

В ходе проведения экспериментального исследования было использовано оборудование, обеспечивающее точные измерения тепловых характеристик ограждающих конструкций. В частности, применялась тепловизионная камера для визуализации распределения температур по поверхности стен, позволяющая выявить участки наибольших теплопотерь. Также использовались датчики температуры и влажности воздуха, размещённые как внутри, так и снаружи здания, для фиксации климатических параметров в различные периоды суток и сезоны года.

Для моделирования и расчета теплопередачи применялся теплотехнический программный комплекс, позволяющий проводить анализ многослойных строительных конструкций с учетом теплопроводности, теплоемкости и паропроницаемости используемых материалов. Помимо этого, использовалась испытательная установка с тепловым потоком для определения сопротивления теплопередаче образцов, что позволило получить точные значения, необходимые для дальнейших расчетов и сравнительного анализа.

Заключение: Основываясь на результатах исследования, можно сделать вывод, что оптимизация тепловой защиты ограждающих конструкций с учетом климатических условий Узбекистана является эффективным инструментом повышения энергоэффективности зданий. Применение расчетной методики позволяет точно определить рациональную толщину и тип теплоизоляционного материала, что способствует значительному снижению теплопотерь и затрат на отопление и кондиционирование. Это особенно актуально для регионов с контрастным климатом, где сезонные перепады температур достигают экстремальных значений. Полученные данные подтверждают, что правильно подобранная теплоизоляция не только улучшает тепловой комфорт внутри помещений, но и обеспечивает устойчивый экономический эффект. Внедрение данной методики в проектную практику позволит повысить качество строительства, продлить срок службы зданий и сократить выбросы парниковых газов за счет снижения

потребления энергии. Это делает оптимизацию тепловой защиты важным направлением в формировании устойчивой и энергоэффективной архитектурной среды Узбекистана.

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ЗНАЧЕНИЕ ЗЕЛЕНЫХ ЗОН В УЛУЧШЕНИИ ЭКОЛОГИЧЕСКОЙ СРЕДЫ ГОРОДА ДЖИЗАК

Аннотация: *В статье рассматриваются современные проблемы и перспективы увеличения площади зеленых насаждений в городской среде Джизака. Обсуждаются основные аспекты устойчивого развития городских территорий, в том числе использование устойчивых видов растений.*

Ключевые слова: *Джизак, экологическое проектирование, устойчивое развитие, город, геопластика, растения, зеленые зоны, климатические условия, социальная среда.*

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IMPORTANCE OF GREEN AREAS IN IMPROVING THE ENVIRONMENT OF THE CITY OF JIZZAKH

Abstract: *The article examines current problems and prospects for increasing the area of green spaces in the urban environment of Jizzakh. The main aspects of sustainable development of urban areas are discussed, including the use of sustainable plant species.*

Key words: *Jizzakh, environmental design, sustainable development, city, geoplastics, plants, green areas, climatic conditions, social environment.*

Введение. Постановлением Президента Республики Узбекистан №ПП-4477 от 4 октября 2019 года принята Стратегия Республики Узбекистан по переходу к «зеленой» экономике на период 2019-2030 годы. По предложению Президента 2025 год назван «Годом охраны окружающей среды и зеленой экономики». В предстоящем десятилетии планируется резко сократить выбросы углерода, внедрить экологически чистые и ресурсосберегающие технологии во все отрасли экономики, широко использовать возобновляемые источники энергии[1].

Также принято Постановление №ПП-436 от 2 декабря 2023 года «О мерах по повышению эффективности реформ, направленных на переход Республики Узбекистан к «зеленой» экономике к 2030 году». Также утверждена Программа по переходу к «зеленой» экономике и обеспечению «зеленого» роста в Республике Узбекистан до 2030 года.

Ландшафтный и экологический дизайн приобретает все большее значение в устойчивом развитии городов и в нынешнюю эпоху глобального

изменения климата и резкого ухудшения экологии. Город Джизак с его уникальной природной средой и сложным рельефом требует особого внимания в этом отношении. Такие территории, как берега реки Сангзор в Джизаке и Парк Независимости «Навруз» являются одними из основных территорий, где могут быть использованы передовые методы ландшафтного дизайна для улучшения экологической и социальной среды. В исследовании проанализированы существующие проблемы, а также изучены возможности и перспективы ландшафтного и экологического дизайна в городской среде Джизака.

Основная часть. Ландшафтно-экологическое проектирование охватывает многие аспекты, включая устойчивое использование ресурсов, сохранение биоразнообразия и улучшение качества жизни городских жителей. В частности, большое внимание в статье уделяется геопластике, зеленым технологиям и интеграции природных элементов в городскую инфраструктуру.

Международный опыт показывает, что ландшафтные проекты в таких городах, как Сингапур и Ванкувер, также могут стать полезной моделью для территории города Джизак. Например, комплекс Gardens by the Bay в Сингапуре состоит из 18 вертикальных садов высотой до 50 метров, которые, помимо выполнения функции обычных деревьев, имеют дополнительные экологические преимущества. Эти вертикальные сады также могут служить в качестве солнечного коллектора, коллектора дождевой воды и естественной системы охлаждения.

Ванкувер, город на западном побережье Канады, известен своими обширными парками и природными зонами, интегрированными в инфраструктуру города, которые помогают улучшить качество жизни его жителей и сохранить биоразнообразие. Стэнли-парк — яркий тому пример.

Сегодня город Джизак является важной природной территорией, но сталкивается с экологическими и социальными проблемами. Для преодоления этих проблем необходим комплексный подход с использованием современных методов ландшафтного и экологического проектирования. Сегодня территория города Джизак подвергается значительному антропогенному воздействию, связанному с промышленной деятельностью и урбанизацией. Загрязнение воды в основном связано со сбросом промышленных отходов и бытовых сточных вод, что несет угрозу ухудшения качества воды и экосистемы реки Сангзор. Загрязнение воздуха в основном связано с выхлопными газами транспортных средств и промышленными выбросами.

Недостаток зеленых насаждений приводит к усилению деградации почв и эрозии. Существующие зеленые насаждения, в том числе парки и аллеи, зачастую находятся в неудовлетворительном состоянии, и требуются значительные усилия для их восстановления и сохранения.

Немаловажную роль играют и социальные проблемы. Отсутствие зеленых насаждений и зон отдыха с высоким уровнем благоустройства

негативно влияет на здоровье и благополучие населения. Кроме того, слабая координация между различными государственными структурами и недостаточное финансирование затрудняют реализацию экологических проектов.

Применение геопластики имеет большое значение при выборе проектных решений. Применение технологии геопластики помогает существенно улучшить эстетические и функциональные характеристики городского пространства за счет создания искусственных рельефов. Например, это позволяет эффективно использовать террасные берега и естественные возвышенности на реках, а также улучшать дренажные системы. Этот метод может быть особенно актуален и полезен в условиях Джизака со сложным рельефом.

Кроме того, геопластика может быть использована для создания ветро- и шумозащитных зон, что особенно актуально для прибрежных территорий реки Сангзор.

Одним из ключевых аспектов проектирования является подбор местных и устойчивых видов растений, адаптированных к климатическим условиям Джизака. Это позволит обеспечить экологическую устойчивость, снизить затраты на содержание зеленых насаждений, укрепить экосистему города.

Согласно утвержденному генеральному плану города Джизака в целях создания дополнительных удобств для населения вокруг парка «Орда», расположенного в центре Джизака, планируется расширение его территории. В него включены проекты по строительству торгово-развлекательных объектов, скверов, инфраструктуры, центров бытового обслуживания и жилого массива, который будет оказывать круглосуточное обслуживание населения. Проекты предусматривают расширение зеленых насаждений, что положительно скажется на здоровье населения.

Также планируется реконструкция территории спортивного комплекса «Согдиана» вдоль реки Сангзор, зеленых зон и зон отдыха вдоль детского парка «Истиклол». Благоустройство реки Сангзор и эффективное использование речной воды определены в качестве приоритетов. Небольшой горный ландшафт территории детского парка «Истиклол» сделает проект более интересным. Есть возможности для создания прибрежных галерей и стеклянных подвесных мостов, чтобы население могло находиться в гармонии с природой.

Устойчивые виды растений играют важную роль в создании благоприятной среды для местной фауны. К подходящим для города Джизака видам растений можно отнести: Павловния (лат. – Paulównia), Сосна (Pinus), Сирень, Можжевельник (Thuja) и др. Эти растения адаптируются к сложным климатическим условиям города Джизака и способствуют устойчивому развитию зеленых насаждений. Такой подход поможет реализовать устойчивые ландшафтные и экологические проекты в городе Джизаке.

Заключение. В соответствии с Программой по переходу к «зеленой» экономике и обеспечению «зеленого» роста в Республике Узбекистан

создание нормативных многофункциональных зеленых зон в городе Джизаке должно осуществляться в соответствии с генеральным планом города. Многофункциональные зеленые зоны будут способствовать улучшению качества жизни жителей города и стимулировать их вести активный образ жизни. Такие зеленые зоны будут не только эстетически и экологически полезны, но и улучшат социальную среду города.

В заключение следует отметить, что подбор местных и устойчивых видов растений в ландшафтно-экологическом дизайне города Джизака обеспечивает комплексный подход с учетом экологических и экономических аспектов. Это послужит формированию зеленой инфраструктуры, удобной не только для экосистемы, но и для жителей города на долгие годы.

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СОСТОЯНИЕ РАЗВИТИЯ ТУРИЗМА В БУХАРСКОЙ ОБЛАСТИ И ГЕОГРАФИЧЕСКИЕ АСПЕКТЫ РАЗВИТИЯ СЕЛЬСКОГО ТУРИЗМА

Аннотация: *В статье представлена информация о состоянии развития туризма в Бухарской области, правительственных решениях по развитию туризма, их реализации, иностранных и местных туристах, посещающих регион. В статье также представлена информация о географических факторах, влияющих на развитие сельского туризма.*

Ключевые слова: *сельский туризм, агротуризм, экотуризм, зеленый (деревенский) туризм, туристический махалле, туристическая улица, ремесла, гостиница, хостел.*

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STATE OF TOURISM DEVELOPMENT IN BUKHARA REGION AND GEOGRAPHICAL ASPECTS OF RURAL TOURISM DEVELOPMENT

Abstract: *The article provides information on the state of tourism development in the Bukhara region, government decisions on tourism development, their implementation, foreign and local tourists visiting the region. The article also provides information on geographical factors influencing the development of rural tourism.*

Keywords: *rural tourism, agrotourism, ecotourism, green (village) tourism, tourist mahalla, tourist street, crafts, hotel, hostel.*

Поскольку сфера туризма в нашей стране развивается, число туристов, посещающих нашу страну, и желающих наладить взаимное сотрудничество увеличивается с каждым днем. В частности, богатый туристический потенциал Бухараи Шарифа и его уникальное древнее очарование все больше привлекают внимание местных и иностранных туристов. Бухарский оазис - один из древнейших городов Средней Азии, один из крупнейших и известнейших торговых центров на Великом Шелковом пути. Бухара славится во всем мире своей богатой и уникальной историей, складывавшейся на протяжении тысячелетий, тесно связанной с важнейшими этапами развития мировой цивилизации, а также своим огромным вкладом в развитие культурных, образовательных, духовных и религиозных ценностей и традиций.

Включение исторического центра Бухары в Список всемирного наследия ЮНЕСКО в 1993 году стало ярким свидетельством его исторической ценности и культурно-цивилизационного значения для всего просвещенного мира.

Согласно постановлению нашего Президента Ш.М. Мирзиёевым утверждена «Программа по ускоренному развитию туристского потенциала города Бухары и Бухарской области на 2017-2019 годы», эффективно осуществляется ее практическая реализация по следующим важным направлениям: сегодня построены новые современные гостиницы, культурно-оздоровительные и торгово-развлекательные центры, объекты туристской инфраструктуры с необходимыми удобствами для развития туризма, созданы удобные условия для отдыха туристов в вечернее время, в том числе за счет улучшения услуг общественного питания, включая современные и изысканные рестораны, театрализованные узбекские национальные представления и демонстрации национальных традиций на объектах культурного наследия. Необходимо отметить, что в соответствии с региональной программой развития туризма в регионе бурно развивается туризм и укрепляется его инфраструктура.

Принято Постановление Президента Республики Узбекистан от 12 августа 2024 года №ПП-287 « О дополнительных мерах по поддержке малого и среднего бизнеса, развитию сервиса и туризма в Бухарской области ». Данным постановлением предусмотрена разработка генеральных планов по улучшению архитектурного облика районов (городов) Бухарской области, созданию благоприятных условий для населения, предпринимателей и туристов, созданию круглосуточных улиц в районах (городах) Бухарской области для развития туристической, развлекательной, гастрономической, торгово-сервисной деятельности, а также специализации районов (городов) Бухарской области и на этой основе разработка направлений развития их «точек роста» (драйверов).

Принято постановление Кабинета Министров Республики Узбекистан от 28 сентября 2022 года № 543 «О мерах по дальнейшему развитию туристической отрасли Бухарской области в 2022 - 2026 годах».

Постановлением предусмотрено увеличение потока туристов (местных и иностранных) в Бухару в 2022-2026 годах до 5 миллионов человек, увеличение объема экспорта в этой сфере до 600 миллионов долларов США, поэтапная реставрация более 800 объектов культуры, строительство гастрономической улицы «Street Food», преобразование археологического памятника «Древний Пойкент» в музей и создание археологического парка, создание копий рукописей Абу Али ибн Сино, хранящихся в музеях Турции, Великобритании и Франции, и размещение их в музее в Бухаре, превращение питомника бухарских газелей в туристическую достопримечательность, проведение молодежного туристического форума.

Также в приложении 2, пункте 1 Программы «Дальнейшего развития туризма в Бухарской области на 2022-2026 годы» к настоящему постановлению разработаны меры по организации «Туристического махалле» в махаллах «Курган» и «Чорсу» Гиждуванского района Бухарской области, «Туристического этно-село Ширин» в поселке Ширин Вобкентского района, «Туристической улицы» по улице Ахмада Дониша и «Туристического махалле» в махалле «Турки Жанди» города Бухары.

В предлагаемом постановлении также приводятся целевые индикаторы развития сферы туризма в Бухарской области на 2022-2026 годы (приложение 1), в том числе количество туристов, посетивших Бухарскую область, и показатели объектов, оказывающих им услуги (таблица 1).

Наибольшее количество туристов посетило регион в 2019 году - 3 640 918 туристов, из которых 603 084 были иностранцами, а 3 037 834 - местными жителями. Бухарскую область посетили 242309 туристов из стран Европы, 25614 из Америки, 136863 из Азии, 118998 из стран СНГ и 18923 иностранных туристов. В этом году 633 626 местных туристов прибыли через туристические компании, а 2 241 013 совершили поездки самостоятельно.

Таблица 1.

Количество туристов и гостиниц, посетивших Бухарскую область

№	Название индикатора	Годы				
		2022	2023	2024	2025	2026
1.	Количество внутренних туристических визитов (млн. чел.)	2,4	2,9	3,4	3,8	4,1
2.	Количество иностранных туристов (тыс.)	450,0	900,0	1,200	1,500	1 800
3.	Экспорт услуг (млн долл. США)	121	200	230	270	300
4.	Количество номеров в средствах размещения (тыс.)	5,399	6,131	6,721	7,336	7,976
5.	Заполняемость номерного фонда гостиниц (в процентах)	45,0	51,0	61,0	71,0	93,0
6.	Количество мест в средствах для размещения (тыс.)	12,147	13,672	14,902	16,182	17,512
7.	Количество гостиниц (ед.)	178	198	218	238	258

8.	Количество семейных гостевых домов (ед.)	264	314	325	335	345
9.	Количество хостелы (ед.)	55	61	66	71	76
10.	Расширение покрытия Интернетом (включая технологии 4G и 5G)	7	8	9	10	11

В Бухарской области в 2022 году - 450 тыс., в 2023 году - 900 тыс., в 2024 году - 1,2 млн. если иностранные туристы посетят, то в 2025 году ожидается 1,5 миллиона иностранных туристов. 2,4 млн в 2022 г., 2,9 млн в 2023 г., 3,4 млн в 2024 г. Если посетят местные туристы, то в 2025 г. 3,8 млн. Ожидаются визиты местных туристов. Это, в свою очередь, увеличится до 121 миллиона к 2022 году. Если услуги будут предоставлены, то в 2024 году 230 миллионов. долларовые услуги, предоставляемые.

В Бухарской области количество гостиниц, обслуживающих туристов, в 2022 году составило 178, в 2023 году - 198, в 2024 году - 218. В 2022 году количество гостевых домов составило 264, в 2024 году - 325, в то время как количество хостелов в 2022 году составило 55, в 2024 году - 66, а к 2026 году прогнозируется их увеличение до 76 (таблица 1).

В 2024 году нашу страну посетили 8,6 млн иностранных туристов. Им оказано услуг на 2,7 млрд долларов, что в 1,5 раза больше, чем в прошлом году. Средняя стоимость визитов из Европы, других регионов и соседних стран выросла в 1,5 раза по сравнению с 2022 годом.

Конечно, развитие сельского туризма очень важно и актуально в каждой стране и регионе. Это направление служит развитию не только туризма, но и местной экономики, инфраструктуры и культурного наследия.

Сельский туризм - вид туризма, позволяющий жителям городов познакомиться с традиционной сельской жизнью, быть на лоне природы и участвовать в таких видах деятельности, как земледелие и животноводство. Он охватывает экологические, этнографические и агротуристические элементы.

Анализ научной и периодической литературы позволил выделить примеры трактовки понятия сельского туризма:

1) сельский туризм – путешествие и отдых горожан на сельских территориях в гостевых домах, созданных сельской семьёй, имеющей собственную сельскую территорию и расположенную на ней усадьбу, представляющая в общем фермерское хозяйство. Именно сельская семья в данном случае обеспечивает проживание, питание и знакомство с местными сельскими достопримечательностями [4].

2) сельский туризм – путешествие за пределами городской жизни в пределах местности с малой численностью населения [5]

3) сельский туризм – отрасль туристического бизнеса, главной особенностью которого являются рекреационные виды деятельности на природе, например, фотографирование и наблюдение за природой, рыбалка и охота, спортивная и приключенческая деятельность [6].

4) сельский туризм – это комплекс различных услуг, включающих в себя проживание, организацию туристических походов, предусматривающее непосредственное участие туриста в жизни сельского населения [1].

5) сельский туризм – это целенаправленное путешествие туристов на сельской территории, включающее в себя ряд таких услуг как: отдых, проживание, организация экскурсионного обслуживания и спортивных мероприятий, а также целый ряд активных видов туризма [7].

Принимая второй подход за основу исследования, будем считать, что в зависимости от особенностей компонентов туристического продукта, данный вид туризма будет называться природным, агротуризм, экотуризм и фармерским. Университет Пудрдью, США, определяет агротуризм как сельскохозяйственный туризм и классифицирует как деятельность, проводимая фермерами для оказания услуг по отдыху или обучению населения, для сбыта сельскохозяйственной продукции и получения дополнительного заработка [8]. Европейская организация Euroter определяет сельский туризм как туризм, поддерживающий развитие аграрных регионов, сохранение культурного наследия и экологии села, возрождение местных традиций и продуктов. Такой вид туризма характеризуется региональной идентификацией и удовлетворяет потребности туристов в размещении, питании, досуговой деятельности, и других услугах, которые способствую устойчивому развитию социальной сферы села [11].

Согласно J.W. Kloeze сельский туризм - это понятие, которое включает в себя всю туристическую деятельность, развивающуюся в сельской среде [12]. Альтернативное определение привел P. Nistureanu: «Сельский туризм - это понятие, которое включает в себя туристическую деятельность, организованную и управляемую местным населением, основанное на тесной связи с окружающей средой: естественной и антропогенной» [13].

При развитии сельского туризма, в первую очередь, следует уделять особое внимание географическим особенностям региона. Поскольку сельский туризм является разновидностью экотуризма, связанного с природой, природные ресурсы (горы, пустыни, реки, озера, ручьи, леса) имеют большое значение. Бухарская область богата природными ресурсами, среди которых пустыня Кызылкум, песчаные барханы Сандыкли, пустынные чащи, озера Денгиз, Каракир, Катта Тузкан и Девхана и другие места. Здесь перспективно развитие сафари, купально-пляжного и охотничьего туризма.

Климат влияет на сезонность сельского туризма. Например, весна и осень - это комфортные и активные сезоны для гостей. Климат Бухарской области характеризуется сухим, резко континентальным и субтропическим пустынным климатом, лето жаркое, продолжительное, сухое, средняя температура июля поднимается до 28-32°C, в барханах до 60-70°C. Средняя температура января от 0°C до −2°C, осадков выпадает 90-150 мм в год, преимущественно весной и зимой. Теплый климат делает этот регион привлекательным для туристов 12 месяцев в году.

Доступ к объектам сельского туризма является одним из важных факторов. Районы с хорошим транспортным сообщением проходят через близлежащие города. Через Бухарскую область проходит главная железнодорожная линия, а крупнейшая железнодорожная станция расположена в городе Коган. По территории области проходят автомагистрали республиканского и международного значения, в том числе Бухара-Ташкент, Бухара-Ургенч-Нукус, Бухара-Туркменабад (Чорджой), Бухара-Термез. В городе Бухара имеется международный аэропорт. Эти транспортные сети создают прекрасные возможности для посещения региона туристами из многих зарубежных стран.

В Бухарской области наличие рабочих мест, местного производства, ремесленничества и фермерских хозяйств создает интересные направления деятельности для туристов. В развитии сельского туризма в регионе интеграция сельскохозяйственной продукции в местную экономику с туризмом принесет взаимную выгоду.

Большой интерес для туристов представляют историко-культурные памятники, народные обычаи, национальная кухня, ремесленные традиции в селах региона. Например, села вокруг Бухары, Кагана, Гиждувана, Вобкента, Ромитана и других городов богаты национальными традициями и привлекают туристов.

При развитии сельского туризма в Бухарской области необходимо обратить внимание на следующее. Улучшение инфраструктуры (дороги, транспорт, интернет) существующих туристических объектов в деревнях, обучение и повышение квалификации местных жителей в сфере туризма, сохранение экологического, исторического и культурного наследия в деревнях, установление партнерских отношений с государственным и частным секторами, а также разработка стратегий брендинга и маркетинга для сельского туризма.

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ОРГАНИЗАЦИЯ ПРОЕКТНОЙ ДЕЯТЕЛЬНОСТИ КАК СРЕДСТВО ПОВЫШЕНИЯ ПОЗНАВАТЕЛЬНОГО ИНТЕРЕСА СТУДЕНТОВ

Аннотация: *в данной статье рассмотрены аспекты организации проектной деятельности как эффективного средства повышения познавательного интереса студентов. Анализируются виды проектов, применяемых в образовательном процессе, раскрываются этапы и методы их реализации.*

Ключевые слова: *проектная деятельность, познавательный интерес, мотивация, самостоятельность, критическое мышление, творческие способности.*

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ORGANIZATION OF PROJECT-BASED ACTIVITIES AS A MEANS TO INCREASE STUDENTS' COGNITIVE INTEREST

Abstract: *This article examines aspects of organizing project-based activities as an effective means to increase students' cognitive interest. The types of projects used in the educational process are analyzed, and the stages and methods of their implementation are revealed.*

Keywords: *project-based activities, cognitive interest, motivation, independence, critical thinking, creative abilities*

Проектная деятельность — это вид образовательной деятельности, в которой основной задачей является достижение цели через решение конкретной проблемы в условиях ограниченных сроков и ресурсов, что завершается созданием практического результата - проекта. При этом обучающиеся самостоятельно приобретают знания, решая практические задачи, требующие интеграции компетенций из разных предметных областей.

Проектная деятельность предполагает самостоятельное планирование и разработку решений для определённой проблемы или задачи, что приводит к созданию конкретного продукта - будь то план мероприятия, технический

чертёж, видеоролик, исследовательская работа, дизайн, веб-сайт или иной материальный или интеллектуальный результат.

Роль проектной деятельности в развитии познавательного интереса и познавательной активности личности занимает особое место в современной образовательной практике благодаря своему потенциалу в формировании познавательного интереса и активности личности.

Основные аспекты влияния проектной деятельности представлены в табл. 1.

Аспект	Влияние
Развитие познавательного интереса	Способствует формированию устойчивого интереса к познанию нового, так как включает работу с актуальными и интересными для обучающихся темами, использование различных источников информации и технологий. Это создает условия для самостоятельного поиска знаний и их практического применения.
Формирование познавательной активности	В процессе работы над проектом учащиеся учатся видеть и формулировать проблемы, выдвигать гипотезы, планировать свои действия, проводить наблюдения и анализировать результаты. Такой подход активизирует умственную деятельность, побуждает к самостоятельному поиску решений и формирует навыки исследовательской работы.
Развитие личностных качеств	Развивает самоконтроль, самообразование, ответственность, инициативность и самостоятельность. Учащийся становится активным субъектом образовательного процесса, что способствует становлению его личности и профессиональной ориентации.
Формирование компетенций	Получение навыков работы с информацией, коммуникативными и кооперативными умениями, учатся рефлексии и самоанализу, что важно для успешной социализации и дальнейшего обучения.
Мотивация и удовлетворение	Работа над проектом приносит удовлетворение от достигнутых результатов, позволяет почувствовать себя исследователем и творцом, что усиливает внутреннюю мотивацию к обучению и познанию.

В образовательной практике активно используются различные виды проектов:

- Исследовательские проекты. Направлены на самостоятельное изучение определённой проблемы, формулирование гипотез, проведение экспериментов, анализ и интерпретацию полученных данных.
- Творческие проекты. Предполагают создание оригинального продукта (презентации, спектакля, альманаха,

выставки и др.), раскрывают индивидуальные способности учащихся, способствуют развитию воображения, эстетического вкуса и навыков самопрезентации.

- Ролевые проекты. Включают моделирование ситуаций с распределением ролей между участниками. Этот вид проектов способствует развитию коммуникативных навыков, умения принимать решения, анализировать ситуации и работать в команде.
- Информационные проекты. Основная задача — сбор, обработка и представление информации по определённой теме.
- Практико-ориентированные проекты. Направлены на решение конкретных практических задач, значимых для учебного заведения или местного сообщества.

Организация проектной деятельности требует системного подхода и включает несколько ключевых этапов: включение в учебные программы, планирование и структурирование, определение форм реализации (проекты могут быть индивидуальными, групповыми или коллективными, краткосрочными и долгосрочными), контроль за выполнением, презентация и оценка.

Последний из этапов является самым важным: публичная защита проекта, обсуждение результатов, самооценка и рефлексия.

Вовлечение в реальные, практически значимые задачи способствует формированию у обучающихся ориентации на успех, укрепляет уверенность в себе и стимулирует стремление к достижению результата. Большинство студентов отмечают, что проектная работа способствует их творческой самореализации и позволяет приобрести опыт самостоятельной деятельности, что делает обучение более осмысленным.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ СТРУКТУРЫ И ДИНАМИКИ ЭКСПОРТА РОСТОВСКОЙ ОБЛАСТИ С ДРУГИМИ РЕГИОНАМИ ЮЖНОГО ФЕДЕРАЛЬНОГО ОКРУГА

Аннотация: *в статье представлен сравнительный анализ структуры и динамики экспорта Ростовской области и других регионов Южного федерального округа за 2020–2023 годы. Исследование охватывает основные товарные группы – продовольственные и непродовольственные товары, выявляет особенности территориального распределения экспортных потоков, а также структурные различия между регионами округа. Особое внимание уделено выявлению конкурентных преимуществ Ростовской области и факторов, оказывающих влияние на формирование экспортных потоков. Полученные результаты позволяют определить приоритетные направления для развития экспортного потенциала региона и совершенствования региональной экономической политики.*

Ключевые слова: *экспорт, структура экспорта, динамика экспорта, Ростовская область, Южный федеральный округ, региональная экономика, конкурентные преимущества регионов.*

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COMPARATIVE ANALYSIS OF THE STRUCTURE AND DYNAMICS OF EXPORT OF ROSTOV REGION WITH OTHER REGIONS OF THE SOUTHERN FEDERAL DISTRICT

Abstract: *the article presents a comparative analysis of the structure and dynamics of exports of the Rostov Region and other regions of the Southern Federal District for 2020-2023. The study covers the main product groups - food and non-food products, reveals the features of the territorial distribution of export flows, as well as structural differences between the regions of the district. Particular attention is paid to identifying the competitive advantages of the Rostov Region and the factors influencing the formation of export flows. The results obtained make it possible to determine priority areas for the development of the region's export potential and improvement of regional economic policy.*

Keywords*: export, export structure, export dynamics, Rostov Region, Southern Federal District, regional economy, competitive advantages of regions.*

Введение

Интеграция регионов России в единую хозяйственную систему в современных условиях во многом определяется их экспортной активностью, структурой товарных и сырьевых потоков, а также способностью адаптироваться к меняющейся рыночной среде. Южный федеральный округ (ЮФО) объединяет регионы, обладающие серьёзным аграрно-промышленным потенциалом и развитой логистической инфраструктурой. Одним из ключевых субъектов в экспортной деятельности Юга выступает Ростовская область, которая традиционно занимает лидирующие позиции по поставкам продукции на внутренний и внешний рынки.

Актуальность исследования обусловлена необходимостью глубокого анализа структуры и динамики экспорта Ростовской области в сравнении с другими регионами ЮФО на фоне трансформации внутреннего рынка, изменения внешних условий хозяйствования, санкционного давления и внедрения новых инструментов государственной поддержки. Научное осмысление сравнения экспортных потоков позволяет выявить конкурентные преимущества региона, определить проблемные зоны, сформулировать приоритетные направления дальнейшего развития экспортного потенциала и предложить рекомендации по оптимизации экспортной политики на региональном уровне.

Цель исследования – провести сравнительный анализ структуры и динамики экспорта Ростовской области с другими субъектами ЮФО, выявить ключевые факторы и направления, влияющие на формирование межрегиональных товарных потоков и конкурентоспособность региона.

Материалы и методы

В качестве информационной базы для проведения исследования использовались официальные статистические данные Росстата, статистический сборник «Регионы России. Социально-экономические показатели» (2024 г.), а также отраслевые аналитические обзоры и публикации научно-исследовательских институтов.

Анализ структуры экспорта Ростовской области и других регионов ЮФО проводился по двум основным товарным группам: продовольственные товары (мясо, мясопродукты, зерновые, растительные масла, молочные продукты, мука, крупы и др.) и непродовольственные товары (строительные материалы, химическая продукция, изделия из пластмасс, техника и др.). Для сопоставления использована традиционная табличная и графическая визуализация динамики по крупным товарным группам и территориям.

В ходе исследования применялись методы сравнительно-структурного анализа, расчёта удельных весов товарных и региональных групп, темпов роста экспорта по отдельным позициям, а также методы анализа относительных и абсолютных показателей. Кроме того, использовался пространственный подход для выявления особенностей территориального распределения экспортных потоков внутри ЮФО и вовне, включая выделение ключевых рынков сбыта.

Результаты

Экспортный потенциал Ростовской области реализуется в рамках широкой и дифференцированной товарной структуры, охватывающей как продовольственные, так и непродовольственные группы. По итогам 2023 года регион занимает одни из ведущих позиций по объёмам вывоза мяса и мясопродуктов (58,1 тыс. т), растительных масел (291,9 тыс. т) и сыра (14,7 тыс. т), уступая лишь Краснодарскому краю по некоторым направлениям, но значительно опережая такие регионы, как Волгоградская область и Республика Крым. Особенно заметна концентрация отгрузок зерна, продуктов глубокой переработки и комбикормов, что отражает высокий уровень развития аграрного сектора и наличия современных перерабатывающих производств в регионе (см. Таблицу 1).

	Мясо и мясо птицы, кроме субпродуктов, т	Консервы мясные, тыс. условных банок	Консервы мясосодержащие, тыс. условных банок	Изделия колбасные, т	Сыры, т
Республика Адыгея					16511
Республика Калмыкия					
Республика Крым	13 123			975	985
Краснодарский край	52 132	5 634	55	5 104	3 891
Астраханская обл.					
Волгоградская обл.	6 450			2 098	
Ростовская область	58 060			19 472	14 728
г. Севастополь					
	Масло сливочное, пасты масляные, масло топленое, т	Масла растительные, т	Мука, тыс. т	Крупа, т	Молокосодержащие продукты с заменителем молочного жира, произведенные по технологии сыра, т
Республика Адыгея	4 565				7 878
Республика Калмыкия					
Республика Крым	924		30		
Краснодарский край	3 758	488 793	64 656	129 934	248
Астраханская область					
Волгоградская область		85 499	68 894	2 140	
Ростовская область	5 022	291 956	2 775	5 967	
г. Севастополь					

Таблица 1 – Вывоз основных видов пищевых продуктов организациями-производителями и организациями оптовой торговли из субъектов российской федерации в 2023 г.

Анализ структуры экспорта продовольственных товаров позволяет отметить доминирование зерновых и бобовых культур как по физическим

объёмам, так и по стоимостному выражению. Основными получателями зерна и продуктов его переработки выступают Краснодарский край (около 10,8 млн тонн), Ставропольский край, а также другие субъекты ЮФО. Значительные объёмы продукции отгружаются в Центральный федеральный округ (более 1 млн тонн), где выделяется Московская область – один из крупнейших центров потребления зерна и перерабатывающей промышленности (см. Рисунок 1, 2).

Рисунок 1 – Межрегиональная торговля основными пищевыми продуктами и зерном (в стоимостном выражении; тыс. руб.): распределение экспорта из Ростовской области по категориям продукции, 2023 г.[92]

[92] Федеральная служба государственной статистики (Росстат). - [Электронный ресурс] - Режим доступа: URL: https://bi.rosstat.gov.ru/biportal/

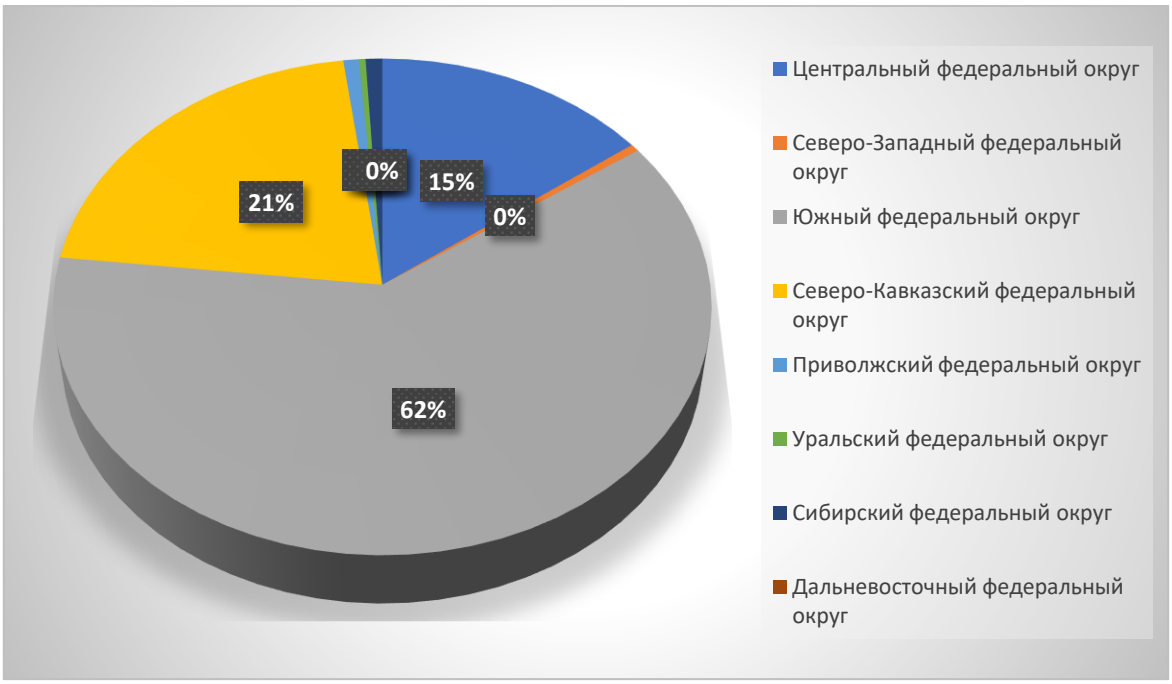

Рисунок 2 – Межрегиональная торговля основными пищевыми продуктами и зерном (в стоимостном выражении; тыс. руб.): распределение экспорта из Ростовской области по округам, 2023 г.[93]

Потоки мясной и молочной продукции, макаронных изделий, комбикормов носят внутриокружной характер. Основные торговые партнёры Ростовской области по этим группам сосредоточены в пределах Юга России, что говорит о высокой степени межрегиональной кооперации и устойчивости связей в агропромышленном комплексе ЮФО. Влияние иных округов, прежде всего Северо-Западного и Приволжского, наблюдается как по отгрузке продукции с более высокой добавленной стоимостью, так и по направлениям, ориентированным на компенсирование нехватки крупных поставщиков.

Второй крупной категорией экспорта выступают непродовольственные товары, в первую очередь строительные материалы (цемент, бетон, железобетонные изделия), а также продукция химической промышленности, пластмассы, пластмассовые изделия и удобрения. Ростовская область стабильно удерживает лидерство в данной группе: совокупный объём экспорта только цементосодержащей продукции превышает показатели соседних субъектов ЮФО, а поставки пластмасс, химикатов и материалов для синтеза востребованы в большинстве соседних и отдалённых регионов (см. Рисунки 3, 4).

[93] Федеральная служба государственной статистики (Росстат). - [Электронный ресурс] - Режим доступа: URL: https://bi.rosstat.gov.ru/biportal/

Рисунок 3 – Межрегиональная торговля непродовольственными товарами (в стоимостном выражении; тыс. руб.): распределение экспорта из Ростовской области по категориям продукции, 2023 г.[94]

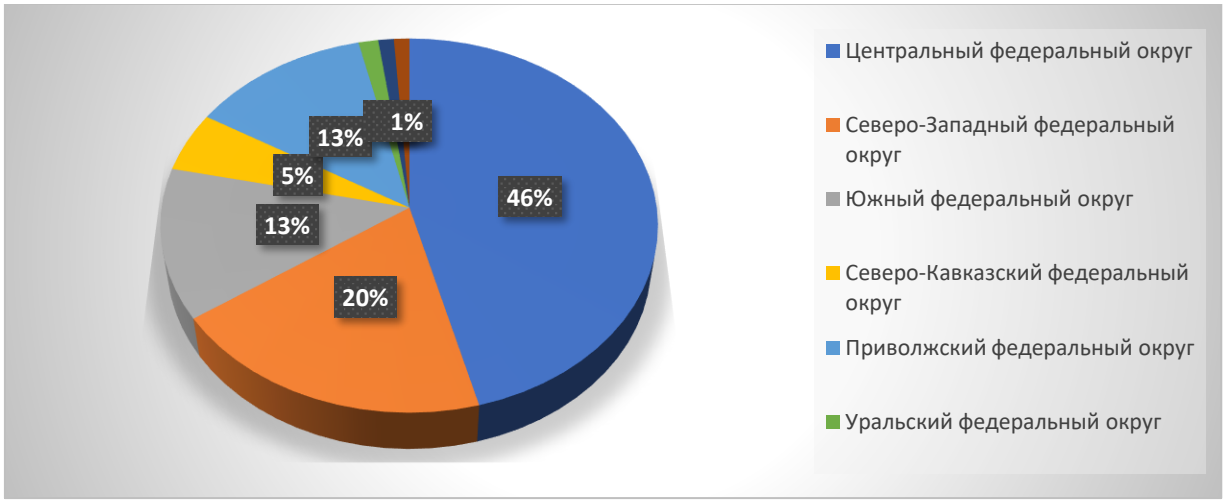

Рисунок 4 – Межрегиональная торговля непродовольственными товарами (в стоимостном выражении; тыс. руб.): распределение экспорта из Ростовской области по округам, 2023 г.[95]

[94] Федеральная служба государственной статистики (Росстат). - [Электронный ресурс] - Режим доступа: URL: https://bi.rosstat.gov.ru/biportal/
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Наблюдается устойчивая динамика роста экспорта химической продукции, телекоммуникационного оборудования, упаковочных материалов и техники для аграрного и строительного комплексов, что становится возможным благодаря развитию индустриальных и логистических кластеров, а также современной транспортной инфраструктуре.

Территориальный анализ экспортных потоков Ростовской области позволяет выделить несколько крупных макрорегиональных реципиентов:

– Южный федеральный округ (наиболее тесная интеграция, значительный объём поставок продовольственных и строительных товаров: Волгоградская область, Краснодарский край, Республика Крым);

– Центральный федеральный округ (лидер по получению высокотехнологичных товаров, стройматериалов и компонентов для промышленности – Московская область, Тамбовская, Курская области);

– Приволжский округ (Пензенская, Мордовия, Саратовская области – потребление удобрений, стройматериалов, пластмасс);

– В меньшей степени – Северо-Кавказский, Сибирский и Уральский округа.

Характерной особенностью последних лет является не только увеличение объёма экспорта основных сельскохозяйственных и промышленных товаров, но и расширение ассортимента продукций с более высокой добавленной стоимостью. Параллельно произошло сокращение доли менее высокотехнологичных и сырьевых товаров, что отражает стратегию региона по развитию внутренней переработки и росту конкурентоспособности на внешних и внутренних рынках.

Сравнительный анализ с другими регионами ЮФО показывает, что экспорт из Ростовской области отличается большей диверсификацией и сбалансированностью между продовольственной и промышленной группами. Краснодарский край лидирует по объёмам растительных масел, Волгоградская область – по отдельным категориям переработанной продукции и химии, тогда как профиль экспорта Республики Крым связан преимущественно со специализированными товарами и сезонной продукцией.

Ростовская область, благодаря крупному агропромышленному комплексу, перерабатывающей и строительной индустрии, распределяет товарные потоки более равномерно, что позволяет поддерживать устойчивые объёмы экспортных поставок даже в условиях колебаний конъюнктуры и логистических перемен.

Анализ динамики показывает, что, несмотря на внешние ограничения, экспортный сектор региона сохраняет позитивную тенденцию: объёмы поставок в 2023 году превышают аналогичные показатели за 2022 г. по

большинству ключевых позиций. Существенное значение имеет адаптация экспортной стратегии к новым условиям – расширяются связи с Центральным и Приволжским округами, наращиваются поставки продукции с более глубокой переработкой, взамен части упавших экспортных контрактов в западном направлении.

Заключение

Комплексное исследование структуры и динамики экспорта Ростовской области в сравнении с другими регионами Южного федерального округа выявило существенное преимущество региона по объёму, диверсификации и устойчивости экспортных потоков. Ростовская область выступает не только флагманом по основным видам сельскохозяйственной и промышленной продукции, но и центром перераспределения товарных потоков на юге России. Диверсификация товарной структуры, высокая вовлечённость в межрегиональную кооперацию, развитая инфраструктура, способность к быстрой адаптации внешнеторговой политики обеспечивают региону устойчивое развитие в условиях вызовов внешней среды.

Сравнительный анализ показал, что за счёт сбалансированного развития аграрного и промышленного секторов, а также активного внедрения современных логистических решений, Ростовская область сохраняет лидирующие позиции по широкому спектру экспортируемых товаров. Основными направлениями для дальнейшего роста выступают расширение производств с высокой добавленной стоимостью, поддержка конкурентоспособного экспорта, инновационное развитие перерабатывающего комплекса и совершенствование логистики.

Полученные результаты позволяют выработать рекомендации для органов власти по оптимизации региональной политики, стимулированию модернизации экспортных производств и усилению кооперационных связей внутри ЮФО и с другими макрорегионами России.

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СЕКРЕТОРНЫЙ ПРОЦЕСС В ДУОДЕНАЛЬНЫХ ЖЕЛЕЗАХ И ЕГО НЕРВНАЯ РЕГУЛЯЦИЯ

Резюме: *В статье изучены исследованные дуоденальные (Бруннеровы) железы*

на тканевом, клеточном строении. Определение характера их секреции и динамики секреторного процесса в норме и при нарушении нормальной иннервации этих желез. Десять животных было забито через 3, 6, 24, 48 и 72 часа после введения раствора пилокарпина в дозе 10 мг на кг веса. Денервация дуоденальных желез производилась посредством экстирпации узлов солнечного сплетения. Для обзорных целей препараты окрашивали гематоксилин-эозином. Бруннеровы железы кошки по морфологическому строению их клеток могут быть отнесены к слизистым железам: их концевые отделы выстланы светлыми клетками, имеют широкий просвет, границы между клетками хорошо определяются.

Ключевые слова: *кошка, Бруннеровы железы, денервация, гистофизиология, двенадцатиперстная кишка, эксперимент.*

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SECRETORY PROCESS IN THE DUODENAL GLANDS AND ITS NERVOUS REGULATION

Abstract: *The article studies the duodenal (Brunner's) glands on the tissue, cellular structure of Brunner's glands, determining the nature of their secretion and the dynamics of the secretory process in the norm and in violation of the normal innervation of these glands. Ten animals were killed 3, 6, 24, 48 and 72 hours after the introduction of a solution of pilocarpine at a dose of 10 mg / kg of weight. Denervation of the duodenal glands was performed by extirpation of the solar plexus nodes. For review purposes, the preparations were stained with hematoxylin and eosin. Brunner's glands of the cat by the morphological structure of their cells can be attributed to mucous glands: their terminal sections are lined with light cells, have a wide lumen, the boundaries between the cells are well defined.*

Key words: *cat, Brunner's glands, denervation, histophysiology, duodenum, experiment.*

Введение. Дуоденальные (Бруннеровы) железы известны уже около трех столетий, но в течение этого времени изучению их структурной

организации и функциональных особенностей было уделено мало внимания, что связано в определенной степени с методическими трудностями [1,2]. Равным образом не изучена динамика секреторного процесса железистых клеток и не определено значение и особенности их структурных компонентов в различные периоды физиологической деятельности. Изучение влияния нервной, сосудистой и эндокринной интегрирующих систем на гистофизиологию желез могут помочь исследователю выяснить закономерности, управляющие процессом секреции. Поскольку высшей интегрирующей системой является нервная система, то изучение ее влияния на функциональную динамику железистой клетки представляется особо важное значение этого вопроса необходимо для понимания патогенеза и сущности возникающих нейродистрофических расстройств не только Бруннеровых желез, но и других железистых органов [3,4]. Вопрос нервной регуляции Бруннеровых желез практически не изучен, нам не удалось найти морфологических работ, в которых бы определялось значение различных отделов нервной системы для функции Бруннеровых желез.

Цель исследования: Изучение на тканевом, клеточном уровнях строения Бруннеровых желез, определение характера их секрета и динамики секреторного процесса в норме и при нарушении нормальной иннервации этих желез.

Материалы и методы исследования: Исследования были проведены на взрослых самцах домашних кошек. Животные после предварительного 24-часового голодания получали однократно в 9 часов утра смешанную пищу и затем последовательно забивались через каждые 3 часа в течение суток (14 животных). Десять животных было забито через 3, 6, 24, 48 и 72 часа после введения раствора пилокарпина в дозе 10 мг на кг веса. Денервация дуоденальных желез производилась посредством экстирпации узлов солнечного сплетения. Было использовано 10 животных, которые были забиты в различные сроки после операции: через 7, 14, 21 день. Материал фиксировался в 12% нейтральном формалине, фиксаторах Карно и Шафера, кроме того, замораживался с целью получения срезов в криостате для гистохимических реакций. Для обзорных целей препараты окрашивали гематоксилин-эозином, комплекс Гольджи выявляли, используя метод Дояма, общий белок - с помощью реакции Даниеля, нуклеиновые кислоты с помощью окраски метиловым зеленым пирон ином. Для выявления и дифференцировки муко-полисахаридов использовали следующие методы: ШИК-реакцию, метод Хейла, комбинированный метод окраски по Риттеру и Алесину, окраску аль циановым синим и толуидиновым синим. Для ферментативного контроля были использованы препараты гиалуронидазы, рибонуклеазы, липазы. Для выявления и распределения щелочной и кислой фосфатаз использовали методы Гомори.

Результаты исследования: По полученным нами данным, концевые отделы дуоденальных желез кошки состоят из одного вида светлых клеток. Бруннеровы железы кошки по морфологическому строению их клеток могут

быть отнесены к слизистым железам: их концевые отделы выстланы светлыми клетками, имеют широкий просвет, границы между клетками хорошо определяются. Проведенный гистохимический анализ секрета, выделяемого Бруннеровыми железами, позволил подтвердить заключение о слизистом характере этих желез. Клетки дуоденальных желез всегда дают резко положительную ШИК-реакцию, которая не исчезает после инкубации срезов с амилазой слюны, следовательно, в состав секрета не входит гликоген. Клетки Бруннеровых желез обнаруживают большую активность щелочной фосфатазы, в то время как активность сукцинат дегидрогеназы, цитохром оксидазы и кислой фосфатазы в них невелика. В результате экспериментального воздействия постоянно возникает целый комплекс нарушений, касающийся сосудистого русла и железистой ткани: расширение сосудов, гемостаз, гибель элементов сосудистой стенки, отек тканей, отслойка ацинусов, запустевание ацинусов и целых долек, слущивание или резкое уплощение секреторных клеток, их гистохимические изменения, поражения органоидов. Степень этих нарушений зависит от времени, прошедшего после операции. Уже при самом раннем сроке после экстирпации узлов солнечного сплетения (7 дней после операции) прежде всего возникают изменения со стороны сосудистой системы Бруннеровых желез: резкое расширение сосудов и переполнение их кровью, а в более позднее время (14 суток и более) и необратимые морфологические изменения их стенки. В первые дни в расширенных сосудах наблюдалось повышенное количество полиморфно ядерных лейкоцитов, но инфильтрации ими ткани Бруннеровых желез не происходило. В других дольках отмечалось резкое уплощение составляющих клеток. Гистохимический анализ, в частности изменение концентрации ШИК-явились свидетельством нарушения секреторной функции. Указанные изменения структурной организации клеток Бруннеровых желез при нарушении их нормальных нервно-тканевых отношений уже сами по себе позволили пред полагать нарушение и, в частности, ослабление функции секретно-образования.

Заключение. Описанные изменения связаны со смешанной денервацией двенадцатиперстной кишки, ибо удалением узлов солнечного сплетения мы, во-первых, производили перерыв чувствительных проводников, идущих к двенадцатиперстной кишке из спинномозговых узлов в составе чревного нерва, и, во-вторых, удаляли мот нейроны для гладкой мускулатуры кишки, в том числе и ее сосудов. Неполной денервацией и вариациями структурной организации солнечного сплетения у кошки, очевидно, можно объяснить почему после операции изменения носят очаговый характер: участки и дольки с выраженными деривационными изменениями чередуются с мало измененными или даже сохранными участками железистой ткани.

Вывод. Таким образом, снятие регулирующего влияния нервной системы на железистую ткань вызывает не только изменения типичных структурных особенностей, но и нарушение ее строго определенной

специфической функциональной активности. Необходимо отметить очень важное, на наш взгляд, сходство микроскопического строения и гистохимических свойств секрета Бруннеровых желез кошки. Очевидно, общими являются и закономерности секреторного процесса как в физиологических условиях, так и в условиях нарушения нервной регуляции функции этих желез.

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ЗАГРЯЗНЕНИЕ ПОЧВЫ ТЯЖЕЛЫМИ МЕТАЛЛАМИ В ДЖИЗАКСКОЙ ОБЛАСТИ

Аннотация. *Тяжелые металлы, характеризующие широкую группу загрязняющих веществ, в последнее время получили значительное распространение. Наиболее острые проблемы, связанные с поступлением тяжелых металлов (ТМ) в почвы.*

Ключевые слова: *Оценка, эффективность, пыль, оценка, предельно допустимая концентрация (ПДК), ступенчатая система.*

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SOIL POLLUTION BY HEAVY METALS IN JIZZAKH REGION

Annotation. *Heavy metals, which characterize a wide group of pollutants, have recently become widespread. The most acute problems are related to the entry of heavy metals into the soil.*

Keywords: *Assessment, efficiency, dust, assessment, maximum permissible concentration (MPC), step system.*

Джизакская область расположена в средней части республики Узбекистан. Граничит с южной стороной Самаркандской области, с восточной стороной Сырдарьинской области, северно-западной стороной Айдара-Арнасайской озёрной системы, северной стороной Республикой Казахстан. На территории города расположено около 50 предприятий оказывающих негативное воздействие на окружающую среду, из которых 4 можно отнести к крупным и средним промышленным предприятиям. (Аккумуляторный завод СП «УзЭксайд», Джизакский цементный завод, управление магистральных газопроводов, Джизакский мукамольный комбинат, асфальтобетонные заводы, ООО Джизакский нефтбаза, хлопкоочистительные заводы, Джизакский пластмассовый завод и т.д.) Тяжелые металлы. Тяжелые металлы (ТМ) уже сейчас занимают второе место по степени опасности, уступая пестицидам и значительно опережая такие широко известные загрязнители, как двуокись углерода и серы. В перспективе они могут стать более опасными, чем отходы атомных электростанций и твердые отходы. Загрязнение ТМ связано с их широким использованием в промышленном производстве. В связи с несовершенными системами очистки ТМ попадают в окружающую среду, в том числе и в почву, загрязняя и отравляя ее. ТМ относятся к особым загрязняющим веществам, наблюдения за которыми обязательны во всех средах. Почва является основной средой, в которую попадают ТМ, в том числе из атмосферы и водной среды. Она же служит источником вторичного загрязнения приземного воздуха и вод, попадающих из нее в Мировой океан. Из почвы ТМ усваиваются растениями, которые затем попадают в пищу. Термин «тяжелые металлы», характеризующий широкую группу загрязняющих веществ, получил в последнее время значительное распространение. В различных научных и прикладных работах авторы по-разному практикуют значение этого понятия. В связи с этим количество элементов, относимых к группе тяжелых металлов, изменяется в широких пределах. В качестве критериев принадлежности используются многочисленные характеристики: атомная масса, плотность, токсичность, распространенность в природной среде, степень вовлеченности в природные и техногенные циклы. В работах, посвященных проблемам загрязнения окружающей природной среды и экологического мониторинга, на сегодняшний день к тяжелым металлам относят более 40 элементов периодической системы Д.И. Менделеева с атомной массой свыше 40 атомных единиц: V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Mo, Cd, Sn, Hg, Pb, Bi и др. По классификации Н. Реймерса (1990), тяжелыми следует считать металлы с плотностью более 8 г/см^3. При этом немаловажную роль в категорировании тяжелых металлов играют следующие условия: их высокая токсичность для живых организмов в относительно низких концентрациях, а также способность к биоаккумуляции и биомагнификации. Практически все металлы, попадающие под это определение (за исключением свинца, ртути, кадмия и висмута, биологическая роль которых на настоящий момент не ясна), активно участвуют в биологических процессах, входят в состав многих

ферментов. Самыми мощными поставщиками отходов, обогащенных металлами, являются предприятия по выплавке цветных металлов (алюминиевые, глиноземные, медно - цинковые, свинцово - плавильные, никелевые, титаномагниевые, ртутные и др.), а также по переработке цветных металлов (радиотехнические, электротехнические, приборостроительные, гальванические и пр). В пыли металлургических производств, заводов по переработке руд концентрация Pb, Zn, Bi, Sn может быть повышена по сравнению с литосферой на несколько порядков (до 10–12), концентрация Cd, V, Sb – в десятки тысяч раз, Cd, Mo, Pb, Sn, Zn, Bi, Ag – в сотни раз. Отходы предприятий цветной металлургии, заводов лакокрасочной промышленности и железобетонных конструкций обогащены ртутью. В пыли машиностроительных заводов повышена концентрация W, Cd, Pb. Под влиянием обогащенных металлами выбросов формируются ареалы загрязнения ландшафта преимущественно на региональном и локальном уровнях. Аналогично зонам загрязнения почв можно выделить и зоны загрязнения растительного покрова. Накопление тяжёлого металлов в почве - это не только увеличение их содержания, но и нарастание экологически опасных последствий, создающих угрозу здоровью человека. Наиболее остро проблемы, связанные с поступлением тяжелых металлов в почвы, стоят в регионах с большой степенью концентрации производства и населения, в том числе в промышленных зонах. Загрязнение почв от газопылевых выбросов промышленных предприятий и ГЭС, особенно работающих на угле, от выбросов автомобилей, от внесения высоких доз разных видов удобрений, гербицидов, пестицидов при интенсивной системе земледелия более опасно по сравнению с другими видами деградации почв. Засушливость климата Джизакской области приводит к увеличению испаряемости с поверхности почвы и повышению концентрации в верхнем гумусовом горизонте целого ряда тяжелых металлов. Другим фактором, способствующим их аккумуляции, является засоление. Почва является мощным поглотителем многих химических элементов. Они удерживаются в поверхностном, плодородном слое. Почвы способны снижать токсичность металлов и загрязнителей за счет своей буферности, но скорость ее самоочищения снижается пропорционально ухудшению ее свойств и потери плодородия. Особенно актуальна эта проблема для орошаемых земель, так как известно, что без проведения профилактических мероприятий, направленных на снижение выщелачивания кальция и обогащение почв органикой, плодородие при орошении снижается и загрязненность прогрессирует. В некоторых таких почвах отмечены увеличение хрома в 2 раза, свинца в 1,8 раза, меди, ванадия и никеля - в 1,4 раза, цинка - в 1,2 раза. Несмотря на исследования многие вопросы по разработке способов инактивации тяжелых металлов изучены недостаточно, некоторые из них для орошаемых почв неприемлемы (внесение извести или дополнительное подщелачивание почв), что и определяет актуальность настоящей работы, направленной на разработку приёмов санации почв, технологически эффективных, экономически рентабельных и экологически

безопасных при невысоких уровнях загрязнения. Для снижения негативного воздействия тяжелых металлов на черноземы обыкновенные террасовые, улучшения их мелиоративного состояния, почвенного плодородия и повышения продуктивности сельскохозяйственных культур рекомендуется внесение компостов, приготовленных на основе птичьего помета, фосфогипса и глауконита. Вявить оптимальные компоненты для приготовления мелиорантов и органоминеральных компостов, определить их поглотительную способность по отношению к тяжелым металлам и их влияние на химические, физико-химические, физические и агрохимические свойства земли обыкновенного террасового орошаемого в лабораторном и полевом опытах.

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ЗНАЧЕНИЕ ЭФФЕКТИВНОГО ИСПОЛЬЗОВАНИЯ ВОДНЫХ ИСТОЧНИКОВ ДЛЯ РАЗВИТИЯ АГРАРНОГО СЕКТОРА

Аннотация: *В статье дано связанность устойчивого производства продукции сельского хозяйства с эффективностью использования, расширения и реконструкция существующих водных источников. А также разработаны предложения и рекомендации по решению проблемы дефицита воды расширяя существующие источники воды на территории сельскохозяйственного производства.*

Ключевые слова: *трансграничные реки, ограниченные водные ресурсы, водосберегающие технологии, дополнительные льготы и преференции, капельное орошение.*

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THE IMPORTANCE OF EFFICIENT USE OF WATER SOURCES FOR THE DEVELOPMENT OF THE AGRICULTURAL SECTOR

Annotation: *The article provides a link between sustainable agricultural production and the efficiency of use, expansion and reconstruction of existing water sources. And also proposals and recommendations for solving the problem of water shortage by expanding existing water sources in the territory of agricultural production are developed.*

Key words: *transboundary rivers, limited water resources, water-saving technologies, additional benefits and preferences, drip irrigation.*

Введение. Известно, что сегодня рациональное использование водных ресурсов является одним из ключевых вопросов устойчивого экономического развития республики. Эта проблема становится все более важной и актуальной в контексте нехватки воды, процесса ухудшения их качества и

новых экономических, политических, социальных и экологических реалий в регионе. Основной целью рационального использования водных ресурсов является обеспечение устойчивого развития аграрного сектора при сохранении водных ресурсов и защите окружающей среды.

Рациональное использование водных ресурсов в аграрном секторе означает оптимальное использование водных ресурсов для поддержания сельскохозяйственной деятельности с минимальным воздействием на окружающую среду и без отрицательного влияния на жизненные потребности людей и экосистем. Одной из главных целей рационального использования водных ресурсов в аграрном секторе является обеспечение продовольственной безопасности и устойчивого развития сельского хозяйства.

Обзор литературы. По данным З.А. Артукметова, 92% от общего объема используемой в Узбекистане воды расходуется на орошение, 5,5% — на коммунально-бытовые нужды, 1,5% — на промышленные нужды, 0,8% — на рыболовство и 0,2% — на энергетические цели [11-13,15]. В Андижанской области наибольшая доля фактически забираемой из водных источников воды, или около 92 процентов, расходуется на орошение сельскохозяйственных культур [14]. По мнению О.П. Умурзакова и Т. Ризаева потребители воды несут значительные затраты на содержание водохозяйственных объектов и обеспечение их надежной работы [3].

З.С.Шохожаева утверждает, что своевременное и регулярное проведение технического обслуживания и капитального ремонта оросительных систем в сельском хозяйстве позволит повысить эффективность оросительных услуг и мелиоративных мероприятий за счет повышения коэффициента использования воды. Он также подчеркивает, что любая ирригационная система зависит от финансовых ресурсов [7,9].

К причинам, сдерживающим развитие ирригационного хозяйства и мелиоративных мероприятий, А. Абдуганиев и А. А. Абдуганиев относят ухудшение состояния ирригации и мелиорации земель, неполное внедрение научно и практически обоснованных севооборотов, снижение эффективности работы оросительных систем, отсутствие стимулов к эффективному использованию земли и воды [16].

Методология исследования. В научной статье использованы методы анализа и синтеза, системного подхода, экономического анализа, группировки, экспертной оценки, сравнения.

Анализ и результаты. Среднегодовые водные ресурсы в бассейнах Амударьи и Сырдарьи, которые являются основными источниками воды в регионе, составляют 114,4 куб. км, а среднегодовые водные ресурсы, используемые в нашей стране, составляют 51 куб. км, из которых более 80% поступает из соседних стран [11].

Отношения, связанные с использованием существующих в стране водных ресурсов, регулируются Законом «О воде и водопользовании» и рядом подзаконных актов. В частности, статьи 35 и 50^{1} Закона Республики

Узбекистан «О воде и водопользовании» предусматривают, что водопользователи должны разумно использовать водные объекты, экономить воду, совершенствовать поливные средства и методы путем внедрения водосберегающих технологий и передовых методов полива.

Водные ресурсы необходимы для орошения, животноводства и других аграрных операций [1,2].

Еще одним методом рационального использования водных ресурсов является мульчирование почвы, которое позволяет сохранять влагу в почве и уменьшать ее испарение. Этот метод также способствует уменьшению необходимости частого полива, что позволяет экономить воду и повышать урожайность [2,6].

Использование малогабаритных систем орошения является еще одним эффективным методом рационального использования водных ресурсов. Эти системы могут быть установлены непосредственно на полях и позволяют более точно дозировать воду, что позволяет уменьшить потери и повысить урожайность.

Основными принципами рационального использования водных ресурсов в аграрном секторе являются:

1. Эффективное использование воды: это означает, что вода должна использоваться оптимально, чтобы уменьшить потери воды.

2. Управление водными ресурсами: это означает, что управление водными ресурсами должно быть эффективным и оптимизированным, чтобы обеспечить их устойчивое использование.

Для улучшения использования водных ресурсов в аграрном секторе Узбекистана необходимо проводить реформы в сфере водохозяйственного управления и совершенствования инфраструктуры для хранения и распределения воды.

В аграрном секторе Узбекистана водные ресурсы используются преимущественно для орошения сельскохозяйственных угодий. Однако, несмотря на наличие обширных водных ресурсов, эффективное использование их не всегда обеспечивается из-за отсутствия необходимых инфраструктурных и технологических решений. Одной из главных проблем является высокая потеря воды в системе орошения из-за старых и неэффективных систем орошения (потери воды могут достигать 40-50%). Необходимо проводить работы по модернизации систем орошения и внедрению современных технологий, таких как капельное орошение, которые позволят снизить потери воды и увеличить производительность земельных угодий [4].

Существует несколько экономических проблем по использованию водных ресурсов в аграрном секторе Узбекистана. Некоторые из них включают:

1. Недостаточное финансирование инфраструктуры орошения: Сельскохозяйственные предприятия в Узбекистане часто сталкиваются с

проблемами в получении финансирования для строительства и совершенствования систем орошения.

2. Неэффективное использование водных ресурсов: В некоторых районах Узбекистана используется устаревшее оборудование для орошения, что может привести к низкой эффективности использования водных ресурсов и к увеличению затрат на сельскохозяйственные операции.

3. Низкие цены на продукцию: Некоторые сельскохозяйственные предприятия в Узбекистане сталкиваются с проблемой низких цен на свою продукцию.

4. Загрязнение водных ресурсов: Использование пестицидов, удобрений и других химических веществ в сельском хозяйстве может привести к загрязнению водных ресурсов (негативно сказывается на здоровье населения и на экосистемах) [14].

В соответствии с Государственной программой Республики Узбекистан «Об улучшении мелиорации орошаемых земель и рационального использования водных ресурсов на 2013–2017 годы», в 2013–2017 годах были применены современные методы орошения на общей площади 104 600 га. Технологии полива были внедрены на 18 418 гектарах с полиэтиленовой пленкой и поливом на переносных гибких трубах [11].

Заключение. Стратегия действий предусматривает к 2025 году следующие меры для улучшения мелиоративного состояния орошаемых земель, развития ирригационных и мелиоративных сооружений, обеспечения их безопасной и устойчивой эксплуатации, рационального и экономного использования водных ресурсов и достижения устойчивого сельскохозяйственного производства:

- строительство и реконструкция 9 км магистральных, межрайонных, межхозяйственных коллекторов, 348,3 км замкнутых дренажных систем, 6 мелиоративных насосных станций, 79 мелиоративных вертикальных скважин, 131 гидротехнических сооружений на мелиоративных объектах;
- ремонт и восстановление 14537,2 км открытых коллекторов, 1330,5 км закрытых дренажных сетей, 15 мелиоративных насосных станций, 791 мелиоративных вертикальных скважин, 2277 гидротехнических сооружений на мелиоративных сооружениях;
- строительство и реконструкция 500 км каналов, 74 км ирригационных лотков, 106 гидротехнических сооружений, 10 км напорных труб, резервуаров вместимостью 625 млн. Кубометров и защита 0,5 км береговой зоны [11].

Практические выводы. Считаем, что необходимо сделать следующее для обеспечения рационального и эффективного использования водных ресурсов, которые обеспечивают устойчивое развитие сельскохозяйственного сектора в нашей стране:

• уделять особое внимание расширению водохранилища;

• увеличить посевную площадь с использованием водосберегающих технологий и технологий;

• строгое соблюдение элементов и правил техники полива на традиционно орошаемых посевных площадях и т. д.

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ПСИХОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ДЕТСКОГО ТВОРЧЕСТВА

Аннотация: *Статья рассматривает вопросы психологических особенностей детского творчества, характерная особенность детского творчества. как его всеобщий характер.*

Ключевые слова и понятия: *психика, субъективный образ, личность, субъект, системность, интегрированность.*

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PSYCHOLOGICAL CHARACTERISTICS OF CHILDREN'S CREATIVITY

Annotation: *The article examines the issues of psychological characteristics of children's creativity, a characteristic feature of children's creativity, as its universal nature.*

Key words and concepts: *psyche, subjective image, personality, subject, systematicity, integration.*

Детство – краткий период жизни, когда над человеком не довлеют рациональные требования соответствовать определенному статусу в обществе и не возник еще критический самоанализ подростка. Ребенка не коснулась еще суровая десница школы, поэтому и творчество его легко и беззаботно, оно равнодушно к норме и менее всего предполагает мнение другого. Детское творчество можно назвать «натуральным», подобно тому как Л. С. Выготский различал натуральные, то есть данные от рождения, природные, и высшие психические функции. Оно отличается открытостью миру, который ребенок воспринимает с оптимизмом. Он ориентирован не на то, что надо, а на то, что возможно.

Характерная особенность детского творчества – его всеобщий характер. В детстве творят все, и реальная проблема этого возраста – не проблема творчества, а проблема его отсутствия, что само по себе достаточно очевидная патология. Отсутствие творчества может быть следствием жесткой системы воспитания, подавившей собственное «Я» ребенка. Особенно опасно, если это произойдет до «первого рождения личности» – примерно в трехлетнем возрасте. Для ребенка характерно в это время вариативное мышление, когда он обнаруживает и раскрывает массу возможностей, создает много видов одного и того же решения, но одинаково привязан к каждому. Пока он не способен отделить удачный вариант от неудачного с точки зрения культуры,

в которой он развивается. Взрослое творчество, напротив, предполагает именно отбор и отсев с позиции вкуса, принятого в обществе, непосредственный диалог с культурой, в которой это творчество рождается .

Если рассматривать творчество как создание нового, то можно утверждать, что все познавательное развитие ребенка проходит исключительно творческим путем. Если взрослый изучает новый язык, используя словари и справочники, то ребенок осваивает родной язык принципиально иначе. Студент методично ищет в словаре объяснение каждому слову из экзаменационного текста, пытаясь подставить слова чужого языка, но сохраняя логику родного, что никогда не приводит к успеху. Малыш поступает как филолог, слышащий неизвестную ему речь и пытающийся понять ее структуру, приспосабливаясь к ней, а не ломая ее, встраиваясь внутрь конструкции родного языка. То, что все здоровые дети способны освоить язык, свидетельствует об их недюжинных языковых задатках. Точно так же, лежа в колыбели, ребенок сопоставляет видимое движение своей руки с тактильными ощущениями от касания ею какого-то предмета и многочисленными сигналами о положении своего тела и рук и осваивает точное схватывание любых предметов. Затем он начинает выделять общие параметры различных объектов, комбинируя отдельные из них. Все это – этапы познания, освоения культурного наследия, осмысления того, что накопило общество, а для ребенка, безусловно, – личностный рост через создание нового для него лично, но весьма обыденного для мира, наблюдающего этот процесс формирования личности многие тысячелетия.

Ребенок слышит человеческую речь и умудряется найти в ней осмысленное содержание. Он впервые воспринимает музыку и находит ей объяснение. Он видит картину и связывает стилизованное яблоко на ней с яблоком иного цвета и иной формы, которое ел на завтрак. Более того, он может опознать как яблоко другие предметы этого класса, хотя они не всегда похожи на то, что он видел на картинке и ел на завтрак. Наконец, в какой-то момент он возьмет карандаш или кисточку, нарисует неровный круг и назовет его словом «яблоко», хотя ни один взрослый не сможет опознать в этом новом объекте реального мира привычную для него форму .

Спонтанный самостоятельный поиск. Подобное творчество является ведущим инструментом познания лишь до тех пор, пока ребенок не освоит человеческую речь настолько, чтобы с ее помощью приступать к целенаправленному обучению, которое происходит уже не творческим путем, а с применением разнообразных когнитивных методов научения, взятых под контроль взрослыми. С этого момента комбинаторные, спонтанные проявления активности ребенка становятся препятствием при передаче конкретного опыта от взрослого, а потому у большинства детей креативность постепенно исчезает .

Желание познавать мир – внутренне присущее ребенку качество, основа которого лежит в бессознательном. Подобно тому как трава стремится занять все вокруг, активность ребенка направляется на все сферы жизни человека, и

малыш пытается освоить то, чем владеет человек как вид. Ребенок не способен объяснить, почему он хочет знать, но по достижении определенного возраста вопрос «А почему?» рождается у него, возможно, независимо от его желания. Несмотря на то что процесс творческого освоения достояния культуры не контролируется сознанием, он существенно отличается от того, что есть у ближайшего к человеку рода – высших обезьян. Доказательства радикального различия развития детей и детенышей обезьян были получены исследовательницей орангутанов Б. Галдикас-Бриндамур (B. Galdikas-Brindamour). Когда у нее родился ребенок, она попыталась воспитывать его вместе с малышом-орангутаном, потерявшим свою мать в очень раннем возрасте. Она пыталась одинаково заботиться о сыне и малыше-орангутане, одновременно отмечая различия в поведении каждого из них на разных этапах развития. Ее наблюдательность была вознаграждена практически сразу. Радикальные различия в поведении заключались в трех аспектах поведения, демонстрировавших непроходимую пропасть между двумя видами.

Процесс обучения детей в детском саду.Во время кормления ребенок быстро наедался и переставал интересоваться пищей, поэтому остаток еды беззаботно отдавал орангутану. Орангутан был голоден всегда и никогда не отказывался от пищи. Это явление знакомо всем владельцам собак. Вне зависимости от возраста животные ведут себя так, как будто хотят есть всегда, и хозяевам необходимо ограничивать их в еде. Это эволюционно оправданный тип поведения – в природе у животных нет холодильников и запасов пищи. Они вынуждены постоянно ее добывать, а потому у них нет такого механизма насыщения, который присущ всем человеческим детям.

Второе различие состояло в том, что ребенок очень рано стал произносить звуки, разнообразие которых увеличивалось со временем. Когда он не спал, то практически постоянно «болтал». У ребенка при рождении, как и у животных, связки подняты достаточно высоко. Но в течение первого года жизни они постепенно опускаются, что позволяет колебаться при изменении их напряжения достаточно большому объему воздуха между связками и ртом, и именно эти колебания представляют собой слышимый звук. У животных связки расположены достаточно высоко, что не позволяет им произносить разнообразные звуки. Кроме того, особенностям речевого аппарата соответствуют и ограниченные возможности мозга.

И наконец, ребенок был невероятно любопытен. Особенно его интересовала инструментальная деятельность людей, к которой он тянулся и пытался участвовать, как только научился самостоятельно передвигаться. Орангутан был совершенно равнодушен к этому аспекту жизни (рис. 3.3).

Ребенок, как губка, впитывает впечатления жизни, накапливает материал и активно перерабатывает его. Следовательно, творчество – удел любого ребенка, это нормальный и постоянный спутник детского развития. Исследовательская деятельность взрослых – это отдельный вид деятельности, который называется научной деятельностью. Для детей любое творчество сопряжено с исследованием. Когда ребенок рисует яблоко, он исследует

форму и цвет, он экспериментирует с объемом и пространством. Нарисовав яблоко, он обнаруживает, что оно висит в пустоте, поэтому он начинает искать ему опору – тарелку, которую также вынужден расположить на чем-то еще и т. д. Точно так же, играя в прятки, ребенок постепенно осваивает тот замечательный факт, что если он видит человека, то и человек видит его, вне зависимости от того, закрывает или открывает глаза сам ребенок. В дальнейшем он сможет вербализовать это на уроках физики в виде законов распространения света, но задолго до этого он сам откроет этот закон интуитивно во время творческой деятельности – в процессе игры или рисования.

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ОСОБЕННОСТИ ЛЕЧЕНИЯ БИОАКТИВНЫМИ МАТЕРИАЛАМИ ПУЛЬПИТА ПОСТОЯННЫХ ЗУБОВ У ДЕТЕЙ

Аннотация: *Главным приоритетом в лечении осложнений кариеса постоянных зубов с несформированными корнями является сохранение пульпы жизнеспособной для завершения апексогенеза. Лечение пульпита постоянного зуба, корни которого находятся на этапе формирования, представляет объективные трудности для врача-стоматолога. Анатомические особенности несформированных корней, такие как: тонкие стенки корня, раструб в апикальной части корня, переходящий в ростковую зону, делают проведение эндодонтических манипуляций технически сложным [39].Лечение постоянных зубов со сформированным корнем у детей также предполагает максимально длительное сохранение витальности пульпы. Это достигается путем применения консервативных методик лечения*

пульпита. Доказано, что эндодонтически пролеченные зубы имеют меньшую выживаемость, в ряде случаев являются латентными, а при определенных условиях и активными очагами инфекции и интоксикации. С развитием клинической стоматологии материалы, способствующие сохранению витальности всей или части пульпы, и методики их применения в зубах с несформированными корнями у детей постоянно изучаются и совершенствуются.

Ключевые слова. *Туннельных дефектов, минералтриоксидагрегат и трикальцийсиликат, Триоксидент, витальность пульпы.*

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FEATURES OF TREATMENT WITH BIOACTIVE MATERIALS FOR PERMANENT TEETH PULPIT IN CHILDREN

Annotation:*The main priority in the management of caries complications in immature permanent teeth is to keep the pulp viable to complete apexogenesis. The treatment of pulpitis of a permanent tooth, the roots of which are at the stage of formation, presents objective difficulties for a dentist. The anatomical features of unformed roots, such as: thin root walls, a bell in the apical part of the root, passing into the growth zone, make endodontic manipulations technically difficult . Treatment of permanent teeth with a formed root in children also involves the longest preservation of pulp vitality. This is achieved through the use of conservative methods for the treatment of pulpitis. It has been proven that endodontically treated teeth have a lower survival rate, in some cases they are latent, and under certain conditions, active foci of infection and intoxication. With the development of clinical dentistry, materials that contribute to the preservation of the vitality of all or part of the pulp, and methods for their use in teeth with unformed roots in children, are constantly being studied and improved.*

Keywords: *Tunneling defects, mineral trioxide aggregate and tricalcium silicate, Trioxident. pulp vitality*

Введение. В настоящее время детскими стоматологами для терапии пульпы используется несколько групп материалов, однако они имеют некоторые недостатки. Длительное время в клинической практике использовались материалы на основе гидроокиси кальция. Данный препарат способствует регенерации пульпы и индуцирует выработку заместительного дентина, но имеет ряд недостатков, таких как: резорбция материала, механическая нестабильность и неустойчивость к микроподтеканиям на протяжении длительного периода времени. Образование «туннельных дефектов» в сформированных минерализованных барьерах способствует проникновению

микроорганизмов, что может стать причиной вторичноговоспалительного процесса в тканях пульпы. В современной клинической практике внедряются новые биоактивные материалы на основе минералтриоксидагрегата и трикальцийсиликата, показывающие перспективные клинические результаты, однако для окончательных выводов требуются более детальные исследования и более длительные сроки наблюдения. В доступной нам литературе имеются подробные исследования стоматологического статуса и описание различных методик лечения пульпита с использованием биоактивных материалов с оценкой изменений микроциркуляции в пульпе у взрослых пациентов. При этом в отечественных и иностранных источниках нам не удалось встретить систематизированных данных о применении биоактивных материалов в лечении пульпита несформированных зубов, влиянии на изменения микроциркуляции в пульпе зуба в детском возрасте и успех лечения в целом.

Цель работы: Повышение эффективности лечения осложненных форм кариеса постоянных зубов у детей за счет использования современных биоактивных материалов.

Материалы исследования: 30 больных , Из которых у мальчиков составляет в среднемх 56%, 44 %.девочек

Методы исследования: 1)лабараторные методы исследования , 2) клинический метод (Рентгенологическое исследование , Ультразвуковая допплерография) 3)статистическая обработка данных

Результаты: Обоснован что использование материалов на основе трикальцийсиликата «Вюёепйпе» и на основе оксидов кальция, кремния и алюминия «Триоксидент» в лечении начального пульпита постоянных зубов с несформированными корнями позволяет завершить процесс апексогенеза в физиологические сроки. При применении данных биоактивных материалов во всех случаях лечения зубов с несформированными и сформированными корнями сохраняется витальность пульпы. что использование материалов на основе трикальцийсиликата «Вюёепйпе» и на основе оксидов кальция, кремния и алюминия «Триоксидент» в лечении начального пульпита постоянных зубов с несформированными корнями позволяет завершить процесс апексогенеза в физиологические сроки. При применении данных биоактивных материалов во всех случаях лечения зубов с несформированными и сформированными корнями сохраняется витальность пульпы.

Заключени: При лечении осложненного кариеса (прямое покрытие пульпы зуба) материалом на основе трикальцийсиликата «Вюёепйпе» наблюдалось более выраженное отложение заместительного дентина в отдаленные сроки (до 24 месяцев после лечения) по сравнению с материалом на основе оксидов кальция, кремния и алюминия «Триоксидент». Установлено, что активизация отложения заместительного дентина при прямом покрытии пульпы зуба происходит через 18-24 месяца после лечения.

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СУПРАВЕНТРИКУЛЯРНАЯ ТАХИКАРДИЯ КАК ОСЛОЖНЕНИЕ ПНЕВМОНИИ У ДЕТЕЙ РАННЕГО ВОЗРАСТА

Аннотация: *Пневмония является распространенным заболеванием у детей, особенно среди детей до пяти лет, и основной причиной заболеваемости и смертности.[4] Пневмония - это острое воспалительное заболевание легких легких, вызываемое различными инфекционными возбудителями (вирусами, бактериями, реже грибками), которое остается одной из ведущих причин заболеваемости и смертности среди детей раннего возраста. [3, 4, 5] Несмотря на то, что продолжающееся поражение органов дыхания, все чаще наблюдаются поражения патологических процессов и других систем, в частности сердечно-сосудистой. У детей раннего возраста на фоне пневмонии обычно развиваются кардиальные признаки, особенно различные формы аритмии. Среди них особое клиническое значение имеет суправентрикулярная тахикардия, характеризующаяся учащённым сердцебиением, возникающим в результате изменения ритма в предсердиях или атриовентрикулярном соединении. Настоящий обзор посвящён анализу аритмии как осложнений пневмонии у детей, с акцентом на патогенез, проявления и значение суправентрикулярной тахикардии в педиатрической практике.[2]*

Ключевые слова: *Пневмония; наджелудочковая; тахикардия.*

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SUPRAVENTRICULAR TACHYCARDIA AS A COMPLICATION OF PNEUMONIA IN YOUNG CHILDREN

Annotation:*Pneumonia is a common disease among children, especially those under five years old, and is a leading cause of morbidity and mortality.[4] Pneumonia is an acute inflammatory disease of the lungs caused by various infectious agents (viruses, bacteria, and less frequently fungi), and remains one of the leading causes of morbidity and mortality in young children.[3, 4, 5] Despite ongoing damage to the respiratory organs, pathological processes affecting other systems, particularly the cardiovascular system, are increasingly observed. In young children, on the background of pneumonia, cardiac symptoms often develop, especially various forms of arrhythmia. Among them, supraventricular tachycardia, characterized by a rapid heartbeat resulting from changes in the rhythm in the atria or the atrioventricular junction, holds particular clinical significance. This review is dedicated to the analysis of arrhythmias as complications of pneumonia in children, with a focus on the pathogenesis, manifestations, and importance of supraventricular tachycardia in pediatric practice.[2]*

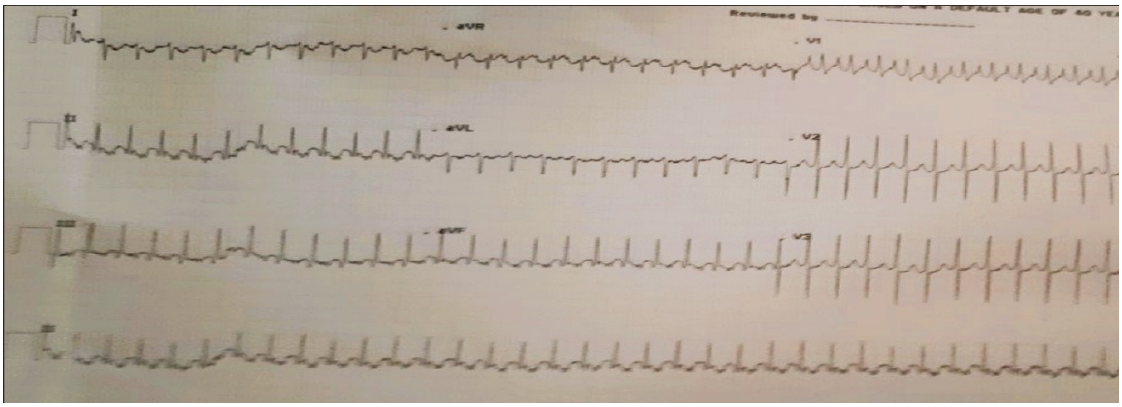
Keywords: *Pneumonia; supraventricular; tachycardia.*

Актуальность исследования. Пневмония является основной причиной заболеваемости и смертности среди детей во всем мире, особенно в развивающихся странах, где наибольшее доля заболевания приходится на детей в возрасте до пяти лет.[1, 2, 3] Пациенты с пневмонией подвержены повышенному риску сердечных осложнений, включая аритмии, миокардит, инфаркт миокарда и перикардиальный выпот, застойную сердечную недостаточность, которые могут способствовать их смертности.[4, 5, 6, 7]

Суправентрикулярная тахикардия (СВТ) является наиболее распространенной сердечной аритмией у детей, особенно требующей терапии.[3] Эта аритмия обычно является проявлением дополнительного пути проведения, который позволяет атриовентрикулярным (АВ) импульсам повторно поступать на нормальный путь, тем самым замыкая круг и стимулируя предсердие и желудочек с высокой скоростью.[6, 8] У младенцов и детей арнего возраста симптомами СВТ обычно плохой аппетит

и тахипноэ, тогда как у детей старшего возраста выраженными симптомами являются сердцебиение и дискомфорт в груди. Электрокардиограмма (ЭКГ) показывает узкую сложную тахикардию с частотой >220/мин и вместе с клинической картиной помогает поставить точный диагноз у большинства пациентов.[8] Распознавание затруднено неспецифическими симптомами, а краткосрочное и долгосрочное лечение продолжает оставаться серьезной проблемой.[6] Гипоксия, сопутствующие заболевания сердца, местное (легочное) и системное (цитокины) воспаление, а также лекарственные препараты играют важную роль в патофизиологии сердечных осложнений у пациентов с пневмонией.[6] Однако основной механизм, ответственный за СВТ у младенцев и детей с пневмонией, неясен. Благодаря достижениям в антиаритмической терапии в настоящее время существует множество терапевтических вариантов лечения СВТ. СВТ — это быстрая, пароксизмальная регулярная тахиаритмия, которая обычно затрагивает систему AV-проводимости и дополнительный AV-проводящий путь.[8] Это наиболее частая устойчивая аритмия у детей. Младенцы и маленькие дети страдают чаще; однако ребенок может испытать первый эпизод и в более старшем возрасте.[3] Сердечные расстройства могут быть серьезными осложнениями пневмонии и также могут способствовать смертности. Хотя точная патофизиология СВТ у пациентов с пневмонией не ясна, было обнаружено, что острые инфекции нижних дыхательных путей могут изменять работу сердечно-сосудистой системы несколькими способами, включая гипоксию и инвазию микроорганизмов, что приводит к миокардиту и другим потенциально опасным для жизни сердечным осложнениям, таким как аритмии.[6] ЭКГ признаки пароксизмальной наджелудочковой тахикардии: ригидный ритм с ЧСС 150-200(у новорожденных более 220) в мин, не измененный желудочковый комплекс, наличие изменен зубца Р (“не синусового”). [8] Этот дополнительный путь обычно проводит импульсы из предсердия в желудочек, вызывая дельта-волну на поверхностной ЭКГ, как при синдроме Вольфа-Паркинсона-Уайта (синдром WPW).[7] Когда дополнительный путь непроводящий и не отображается на поверхностной ЭКГ, его называют скрытым.[1, 2]

Рисунок 1



Электрокардиограмма пациента, показывающая наджелудочковую тахикардию

СВТ может быть вызвана, когда по какой-то причине дополнительный путь рефрактерен к импульсу, который он получает из предсердия, но позже проводит импульс в обратном направлении из желудочка в предсердие, в свою очередь, инициируя второй быстрый прямой импульс, который повторно входит в желудочек через узел AV и нормальный путь проведения.[1] Инициирующим событием может быть эпизод преждевременного наджелудочкового или желудочкового сокращения, синусовая пауза, синусовая тахикардия или миокардит.[2]

Другой распространенный механизм СВТ у детей включает дополнительный путь в АВ-узле или вокруг него (узловой обратный вход АВ).[6, 8] Эктопическая предсердная тахикардия, трепетание предсердий и узловая тахикардия являются другими разновидностями СВТ.

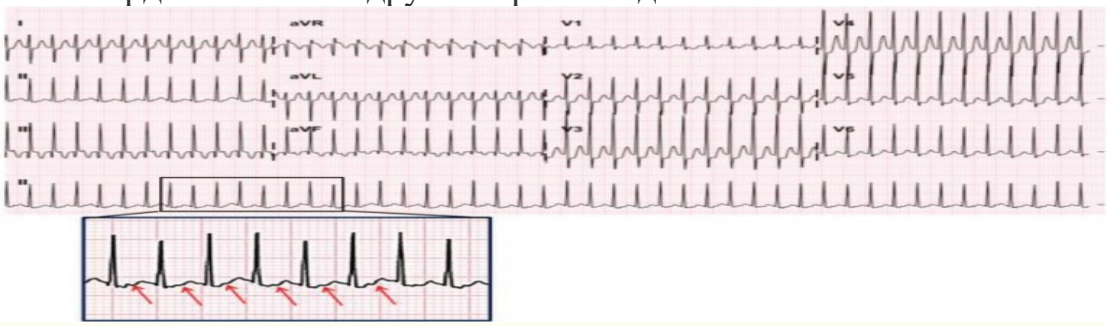


Рис 2

Атриовентрикулярная реципрокная тахикардия. Показана узкая тахикардия QRS с частотой желудочкового ритма 245 уд/мин. Короткий интервал RP типичен для атриовентрикулярной реципрокной тахикардии. Ретроградные зубцы P (стрелки) показаны в сегменте ST в отведении II.

Трепетание предсердий составляет значительную долю фетальных и 5%–10% неонатальных тахикардий.[7]

Диагноз - Независимо от механизма возникновения, СВТ имеет общий способ проявления. Симптомы неспецифичны у младенцев и маленьких детей

и включают плохое питание, тахипноэ, раздражительность и чрезмерный плач.[6, 9]

Для приступа наджелудочковой пароксизмальной тахикардии характерно внезапное начало. Ребенок ощущает сильное сердцебиение, нехватку воздуха, головокружение, слабость, тошноту, страх смерти. Отмечаются бледность, повышенное потоотделение, полиурия. Тоны сердца громкие, хлопающие, ЧСС не поддается подсчету, набухают шейные вены. Может быть рвота, которая часто останавливает приступ. Сердечная недостаточность (одышка, гипотония, гепатомегалия, снижение диуреза) развивается нечасто, преимущественно у детей первых месяцев жизни и при затянувшихся приступах.

На сердцебиение и дискомфорт в груди чаще жалуются дети старшего возраста.[3] У пациентов обычно симптомы проявляются остро, без какого-либо идентифицируемого провоцирующего фактора.[2] Диагноз СВТ основывается на анамнезе, физическом осмотре и ЭКГ.[1] Тахикардия у младенцев заболевщими пневмонии очевидна при осмотре. Повышенная частота сердечных сокращений и узкие комплексы QRS наиболее полезны в случаях СВТ.[1] Известно, что в 10% случаев СВТ наблюдается широкий комплекс QRS вследствие аберрантной проводимости, у 90% пациентов наблюдается узкий комплекс.[3] Зубцы Р, как правило, не видны на поверхностной ЭКГ при СВТ, а если присутствуют, то являются аномальными, и эти аномальные зубцы *P* можно лучше оценить, если записать полосу ритма со скоростью 50 мм/с, а не обычные 25 мм/с.[3] Управление - непрекращающаяся СВТ у детей требует вмешательства из-за риска ухудшения гемодинамики. У младенцев это часто является неотложной медицинской помощью, поскольку они быстро переходят в состояние шока. Рефлекторные пробы таких как стимуляция блуждающего нерва массажем каротидного синуса, маневром Вальсальвы, прикладыванием кубиков льда к лицу (рефлекс ныряния) или их комбинацией изначально предпринимается у стабильного ребенка, и они играют роль даже у нестабильного пациента в ожидании более радикальной терапии.[2 , 7] Надо иметь ввиду что рефлекторные пробы не всегда снимают приступы пароксизмальной тахикардии, вернуть СВТ к синусовому ритму. При отсутствии эффекта от вышеперечисленной терапии через 30-60 мин купировать приступ назначением антиаритмических препаратов. Антиаритмические препараты вводятся последовательно (при отсутствии эффекта на предыдущий) с интервалом 10-20 мин. Универсальным препаратом выбора для всех пациентов с СВТ является аденозин.[3] Аденозин действует, вызывая временную блокаду АВ-узла, тем самым прерывая путь реентерации. Он имеет чрезвычайно короткий период полувыведения (10–15 с) и эффективен для прерывания приступа у большинства пациентов. Аденозин следует вводить в виде болюса в хороший венозный доступ в верхней конечности, используя трехходовое соединение. Начальная доза составляет 0,1 мг/кг, а повторные дозы — 0,2 мг/кг с максимальной дозой 0,3 мг/кг.[6] Шприц,

загруженный аденозином, и второй шприц с 3–5 мл физиологического раствора подсоединяются к трехходовому катетеру. Врач вводит аденозин в виде болюсного толчка, и как только он его завершает, ассистент вводит физиологический раствор, изменив направление трехходового катетера. Бегущая полоса ритма ЭКГ отслеживает эффект достижения аденозина сердцем. Существует период сердечной асистолии, длящийся 5–15 с, за которым следует восстановление синусового ритма.[7] Однако в период асистолии могут наблюдаться эпизоды узловых и желудочковых комплексов с дополнительным риском немедленного рецидива СВТ.[5, 9] Обычные побочные эффекты ограничиваются вегетативными нарушениями, такими как чувство надвигающейся гибели, чрезмерное слюнотечение, боль в животе, рвота, приливы и головная боль (10%–25%).[1, 5] Совсем недавно также были зарегистрированы основные побочные эффекты препарата, такие как апноэ, длительная асистолия, ускоренный желудочковый ритм, мерцательная аритмия и ширококомплексная тахикардия.[6, 9] Поэтому перед введением аденозина следует держать наготове реанимационное оборудование. Другие антиаритмические препараты, такие как амиодарон, флекаинид и верапамил, которые являются другими вариантами лечения СВТ, они часто не рекомендуются младенцам из-за риска гипотонии и шока. Препараты дигоксин и пропранолол, дают хорошим ответом и преобразованием СВТ в синусовый ритм после короткого периода асистолии. Для дигоксина ударная доза составляла 30 мкг/кг, и она вводилась тремя разделенными дозами в виде инфузии в течение 20 минут каждая с интервалом в 8 часов. Начальная доза составляла половину общей дозы (15 мкг/кг), а последующие дозы — одну четвертую (7,5 мкг/кг). Поддерживающая доза составляла 10 мкг/кг ежедневно в двух разделенных дозах, вводимых перорально. Эти препараты действуют, вызывая AV-блокаду. [8] Они оказывают более длительное действие, чем аденозин, и повторные дозы можно вводить перорально.

Рисунок 3

Электрокардиограмма пациента, показывающая нормальный синусовый ритм после введения дигоксина

Резистентная или часто повторяющаяся СВТ являются другими показаниями для использования дигоксина. На непосредственных этапах после перехода к синусовому ритму пациентам требуется постоянное наблюдение для выявления и лечения рецидивов. Проводиться ЭКГ в 12

отведениях для поиска признаков преждевременного возбуждения (синдром WPW). Рецидивы лечатся таким же образом с аденозином, используя возрастающие дозы и заботясь об оптимизации режима введения.

При возможности, у пациентов в критическом состоянии, которым сложно обеспечить внутривенный доступ, необходимо прибегнуть к электрической кардиоверсии постоянного тока.[8] Рекомендуемая доза энергии составляет 0,5–2 Дж/кг. Для младенцев используются детские электроды; детям весом более 10 кг требуются электроды взрослого размера.[3] У отдельных пациентов, когда все другие меры неэффективны, для прекращения тахиаритмии может использоваться чреспищеводная предсердная стимуляция. Радиочастотная (РЧ) катетерная абляция является еще одним вариантом лечения. Главным преимуществом этого режима терапии является перспектива излечения. Данные по РЧ катетерной абляции дополнительного пути при СВТ показали начальный уровень успеха 94% и отсутствие рецидива 85%, 77% и 66% через 1 год, 2 года и 3 года соответственно после процедуры.[7 , 8] Однако ее можно проводить только в специализированных центрах, и даже в лучших центрах наблюдается высокий уровень осложнений 2,9%.[8]

Выводы/Заключение.

Суправентрикулярная тахикардия (СВТ) является значимым и часто встречающимся осложнением пневмонии у детей раннего возраста. Несмотря на то, что пневмония в первую очередь поражает органы дыхания, её последствия могут оказывать влияние на сердечно-сосудистую систему, приводя к нарушениям сердечного ритма. СВТ, как форма аритмии, требует своевременной диагностики и лечения, так как может усугубить состояние ребёнка, увеличить риск сердечно-сосудистых заболеваний и осложнить ход основного заболевания. Понимание патогенеза и механизмов развития СВТ при пневмонии способствует улучшению диагностики и терапии, а также снижению частоты неблагоприятных исходов у детей раннего возраста.

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МЕТОДИКА ПРЕПОДАВАНИЯ ПРИНЦИПА СУПЕРПОЗИЦИИ В КУРСЕ АТОМНОЙ ФИЗИКИ: ДИДАКТИЧЕСКАЯ ЗНАЧИМОСТЬ, СОВРЕМЕННЫЕ ТЕХНОЛОГИИ И МЕТОДИЧЕСКИЕ ПРИЁМЫ РЕАЛИЗАЦИИ

Аннотация*: В статье анализируются основные дидактические трудности, возникающие при преподавании принципа суперпозиции в курсе квантовой механики. Особое внимание уделяется психологическим барьерам, связанным с абстрактностью понятия и его отличием от классических представлений. Обоснована необходимость применения визуализации, аналогий и компьютерного моделирования для повышения эффективности усвоения. Предлагаются методические рекомендации, направленные на формирование у студентов глубокого понимания суперпозиции как фундаментального принципа квантовой теории.*

Ключевые слова*: атомная физика, принцип суперпозиции, преемственность, последовательность, методические рекомендации, интеграция учебных программ, дидактика, регрессионный анализ.*

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METHODOLOGY OF TEACHING THE PRINCIPLE OF SUPERPOSITION IN THE COURSE OF ATOMIC PHYSICS: DIDACTIC SIGNIFICANCE, MODERN TECHNOLOGIES AND METHODOLOGICAL METHODS OF IMPLEMENTATION

Abstract: *The article analyzes key didactic challenges in teaching the principle of superposition in quantum mechanics. Special attention is given to psychological barriers arising from the abstract nature of the concept and its contrast with classical intuition. The need for visualization, analogies, and computer modeling is emphasized to enhance students' conceptual understanding. Methodological recommendations are proposed to support effective learning and to help students grasp superposition as a fundamental principle of quantum theory.*

Keywords*: atomic physics, superposition principle, continuity, consistency, methodological recommendations, integration of educational programs, didactics, regression analysis.*

Постановка задачи. Принцип суперпозиции является ключевым концептом квантовой механики и атомной физики, формирующим основу для понимания квантовых состояний, интерференционных явлений и взаимодействий частиц. Однако его преподавание сталкивается с рядом проблем, обусловленных как абстрактностью самого принципа, так и методическими сложностями его интеграции в учебный процесс. Актуальность углублённого изучения этой темы в современных университетских программах обусловлена следующими факторами:

1. Фундаментальная роль принципа суперпозиции в квантовой физике. Принцип суперпозиции утверждает, что любая линейная комбинация допустимых квантовых состояний также является допустимым состоянием системы. Это позволяет описывать такие явления, как интерференция волн де Бройля, квантовая запутанность и суперпозиция энергетических уровней [1, 2]. Без понимания этого принципа невозможно освоение последующих тем, включая атомные спектры, квантовые переходы и современные приложения (квантовые вычисления, нанотехнологии). В качестве примера можно привести интерференционные эффекты, возникающие из-за суперпозиции состояний, лежат в основе работы лазеров, электронных микроскопов и квантовых алгоритмов [1].

2. Трудности усвоения студентами. Абстрактная математическая формулировка принципа (линейная алгебра гильбертова пространства) и отсутствие классических аналогов затрудняют его восприятие. Как показал опыт, многие студенты воспринимают суперпозицию как формальный математический приём, не связанный с физической реальностью [2, 3]. Исследования показывают, что до 60% студентов не могут корректно интерпретировать вероятностный характер измерений в состояниях, представляющих собой суперпозицию других состояний [5].

3. Современные образовательные требования. Цифровизация образования и рост интереса к квантовым технологиям диктуют необходимость адаптации традиционных курсов. Современные студенты, являясь «цифровыми аборигенами», ожидают интерактивных и визуализированных форм обучения, которые отсутствуют в классических лекциях [4, 5]. При этом существующие учебные программы часто уделяют недостаточно внимания: связи принципа суперпозиции с экспериментальными данными (например, интерференцией в двухщелевом эксперименте); применению принципа в реальных задачах (расчёт вероятностей переходов, анализ спектров).

Отметим, что принцип суперпозиции служит мостом между разделами физики: в атомной физике он объясняет структуру энергетических уровней и правила отбора для переходов, в квантовой оптике лежит в основе когерентности и интерференции фотонов, а в квантовой информатике используется для описания кубитов и квантовых алгоритмов.

Без чёткого понимания физической сути принципа суперпозиции студенты не смогут эффективно работать в междисциплинарных областях, таких как квантовая химия или наноэлектроника [5].

Отметим, что актуальность разработки новых методик преподавания подтверждается такими педагогическими исследованиями, как преемственность (принцип суперпозиции должен вводиться на основе классических аналогий, что обеспечивает плавный переход от интуитивных представлений к квантовым), визуализация (использование симуляторов типа PhET, Quantum Composer для моделирования суперпозиции спиновых состояний или интерференционных картин, практико-ориентированные задания (расчёт вероятностей обнаружения частицы в суперпозиции состояний, анализ спектральных линий как результата интерференции) [3, 4, 5]. Перечисленные факты обуславливает актуальность изучения принципа суперпозиции в курсе атомной физики обусловлена его фундаментальной ролью в квантовой механике, требованиями современных образовательных стандартов и необходимостью подготовки специалистов для высокотехнологичных отраслей. Для преодоления методических трудностей необходима интеграция активных методов, цифровых инструментов и междисциплинарного подхода — как показывают теоретические исследования и педагогическая практика [2, 4, 5].

Реализованные работы. Следует обратить особое внимание, на то, что современные учебные программы по атомной физике, несмотря на их фундаментальную значимость, зачастую сохраняют структуру, сформированную в условиях доминирования классических подходов к преподаванию. Это создаёт дисбаланс между актуальными требованиями к подготовке студентов и реальным содержанием курсов. Принцип суперпозиции, будучи центральным элементом квантовой механики, традиционно рассматривается в рамках ограниченного числа лекционных часов, что не позволяет раскрыть его роль в объяснении современных физических явлений и технологических приложений. Узкие временные рамки и перегруженность программ устаревшими темами (например, избыточным вниманием к полуклассическим моделям атома) приводят к поверхностному усвоению материала, что негативно сказывается на качестве подготовки будущих специалистов.

Таким образом, модернизация преподавания принципа суперпозиции требует системного пересмотра традиционных подходов, интеграции цифровых средств и ориентации на практические и междисциплинарные навыки. Будущие исследования могут быть направлены на эмпирическую проверку эффективности предложенных методик и их внедрение в реальные учебные курсы.

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ОЦЕНКА ПИТАТЕЛЬНОЙ ЦЕННОСТИ РАЦИОНА ПУТЕМ КОРМЛЕНИЯ КРОЛИКОВ КОРМАМИ, ЗАГРЯЗНЕННЫМИ РАЗЛИЧНЫМИ КОЛИЧЕСТВАМИ КАДМИЯ

Аннотация: *В статье представлены результаты эксперимента по изучению влияния различных уровней загрязнения кормов кадмием на питательную ценность рациона кроликов. Цель исследования заключалась в оценке физиологического состояния, прироста живой массы, потребления корма и биохимических показателей крови животных при поступлении в организм кадмия в разных концентрациях. Эксперимент проводился на контрольной и нескольких опытных группах кроликов, получавших рацион с добавлением заданных количеств кадмия. Результаты исследования подчеркивают необходимость контроля содержания тяжелых металлов в кормах сельскохозяйственных животных.*

Ключевые слова: *корм, прирост, масса, белок, углевод, соль, кадмий.*

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ASSESSMENT OF THE NUTRITIONAL VALUE OF THE DIET BY FEEDING RABBITS WITH FOOD CONTAMINATED WITH VARIOUS QUANTITIES OF CADMIUM

Abstract:*The article presents the results of an experiment to study the effect of various levels of feed contamination with cadmium on the nutritional value of the rabbit diet. The purpose of the study was to assess the physiological state, live weight gain, feed consumption and biochemical parameters of the blood of animals upon the intake of cadmium in different concentrations. The experiment was conducted on a control and several experimental groups of rabbits receiving a diet with the addition of specified amounts of cadmium. The results of the study emphasize the need to control the content of heavy metals in the feed of farm animals.*

Key words: *feed, gain, weight, protein, carbohydrate, salt, cadmium.*

Кролики питаются в основном зелеными травами, сочными кормами, грубыми кормами и сильно обогащенными кормами. В связи с этим было определено содержание кадмия и свинца в полевом сене и пшеничной соломе, заготовленных с участков вокруг крупных магистральных дорог. Полученные данные сравнили с количеством тяжелых металлов, которые могут содержаться в этих кормах. Затем изучили влияние количества, потребляемого экспериментальными животными корма на метаболические процессы в их организме, а именно на изменение количества форменных элементов в крови.

Подопытные кролики прошли через три периода: контрольный период, когда содержание кадмия в сухом веществе рациона составляло 0,164 мг/кг; I экспериментальный период, когда содержание кадмия было увеличено в 3 раза и составило 0,492 мг/кг; и II экспериментальный период, когда содержание кадмия в рационе кроликов было увеличено в 6 раз по сравнению с контрольным периодом и достигло 0,984 мг/кг.

В целом, все сравниваемые периоды проводились на 5 голов кроликов по методу латинского квадрата. Таким образом, подопытные животные были аналогичными по возрасту, полу и живой массе, и полностью соответствовали порядку и правилам проведения экспериментов.

Эксперименты проводились методом групп и периодов. Для достижения цели экспериментов были составлены рационы с различным содержанием тяжелых металлов, которые приведены в таблице ниже. Эти рационы использовались для определения обмена веществ в организме животных контрольной и экспериментальной групп при кормлении рационами, составленными по норме.

Все питательные вещества в рационе, за исключением тяжелых металлов, были идентичными в обеих сравниваемых группах. Это свидетельствует о наличии возможности достижения запланированной цели.

Поскольку виды кормов в рационе животных обеих групп и количество питательных веществ в их составе были одинаковыми, содержание биологически ценных веществ, составляющих рацион, также оказалось идентичным. Согласно полученным данным, питательная ценность рациона составила 0,12 кормовых единиц, 1,21 МДж обменной энергии, 7,3 грамма переваримого протеина, 0,27 грамма кальция и 0,15 грамма фосфора.

Таблица 1.

Рационы кормления экспериментальных животных

Название продуктов питания		Группы		
		Контрольная	**I экспериментальная**	**II экспериментальная**
1	Люцерна	0,3	0,3	0,3
2	Полевое сено	0,2	0,2	0,2
3	Концентрат	0,2	0,2	0,2
4	Соль	yalama	yalama	yalama
5	Кормовая единица	0,12	0,12	0,12
6	Обменная энергия, мДж	1,21	1,21	1,21
7	Усвояемый белок, г	7,3	7,3	7,3
8	Са,г.	0,27	0,27	0,27
9	Р, г.	0,15	0,15	0,15
10	Кадмий, мг/кг	0,164	0,492	0,984

Разница между сравниваемыми группами заключалась только в содержании кадмия в рационе. Если в рационе животных контрольной группы на 1 кг сухого вещества приходилось 0,164 мг/кг кадмия, то количество кадмия в рационе животных I-й опытной группы было увеличено в 3 раза, то есть до 0,492 мг/кг, а количество кадмия в рационе животных II-й опытной группы было увеличено в 6 раз, достигнув 0,984 мг/кг. Заданное количество кадмия в рационе было достигнуто путем скармливания кроликам концентрата, смешанного с водным раствором хлорида кадмия в составе концентрата рациона.

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СОЛНЕЧНАЯ ЭНЕРГИЯ И ЕЁ ЗНАЧЕНИЕ СЕГОДНЯ

Аннотация: *Солнечная энергия, одна из форм возобновляемой энергии, в настоящее время рассматривается как один из источников, который может помочь удовлетворить наши потребности в энергии. В статье представлена информация о современной значимости биоэнергетики среди возобновляемых источников энергии.*

Ключевые слова: *солнечная энергия, поставка, естественный, устойчивый, топливо, окружающая среда, климат.*

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SOLAR ENERGY AND ITS IMPORTANCE TODAY

Abstract: *Solar energy, one of the forms of renewable energy, is currently considered as one of the sources that can help meet our energy needs. The article provides information on the current importance of bioenergy among renewable energy sources.*

Keywords: *solar energy, supply, natural, sustainable, fuel, environment, climate.*

Технологический прогресс сделал солнечную энергию одним из самых эффективных и доступных видов энергии в секторе возобновляемых источников энергии. Этот неограниченный источник энергии не только способствует устойчивости нашей планеты, но и привлекает инвестиции, создает рабочие места и повышает конкурентоспособность компаний.

В то время, когда забота о нашей планете и окружающей среде является нашим главным приоритетом, нам необходимо знать о различных типах солнечной энергии, о том, как они работают и как мы можем расширить их использование в качестве источника выработки электроэнергии.

Солнечная энергия — это возобновляемый источник энергии, который никогда не иссякнет. Солнечная энергия чиста. Он не создает выбросов углерода или других удерживающих тепло «парниковых» газов. Он не наносит никакого ущерба окружающей среде, связанного с добычей или бурением ископаемых видов топлива. Кроме того, солнечная энергия потребляет меньше воды, в отличие от электростанций, которые вырабатывают электроэнергию с помощью паровых турбин.

Солнечная энергия может сократить расходы на электроэнергию в вашем доме.

-Солнечная энергосистема для вашего дома снизит вашу зависимость от электросети и поможет вам сэкономить на счетах за электроэнергию. У некоторых владельцев жилых солнечных электростанций может даже быть избыток электроэнергии, который они могут продать коммунальным службам. Вместо оплаты счета за электроэнергию домовладельцы получают счет за коммунальные услуги. Вам не обязательно покупать целую солнечную энергосистему, чтобы сократить расходы на электроэнергию для вашего дома. Чтобы сэкономить деньги, выбирайте солнечные светильники, которые питаются от солнца, просто от солнечного света, а не от электросистемы вашего дома.

-Солнечная энергия может вернуть вам деньги с помощью кредитов на возобновляемую солнечную энергию (SREC).

В некоторых штатах предлагаются сертификаты на использование возобновляемой солнечной энергии (SREC). Каждый представляет собой мегаватт-час электроэнергии, выработанной с помощью солнечной энергии. Поставщики электроэнергии приобретают эти сертификаты для соответствия своему стандарту возобновляемой энергии, который требует, чтобы определенный объем их возобновляемой энергии поступал из солнечной энергии. Вы можете продавать SREC за продукцию вашей системы, что является еще одним способом заработать деньги на своих инвестициях.

- Дома с установленными солнечными панелями могут увеличить стоимость

Покупатели жилья могут заплатить больше за дом с установленными солнечными панелями. Учитывая все плюсы и минусы солнечной энергетики, экономия на счетах за электроэнергию и деньги от продажи электроэнергии коммунальным предприятиям — все это идет в плюс. Системы солнечной энергии для жилых помещений высоко ценятся и могут увеличить стоимость дома при перепродаже. Стоимость дома с солнечными панелями может быть на 15 000 долларов выше, чем у его соседей.

Солнечные системы очень просты в установке и требуют минимального обслуживания. Если вы выбираете договор аренды солнечной энергии или договор купли-продажи электроэнергии (PPA), оба эти вопроса решаются вашим поставщиком солнечной энергии. Подумайте об этом, когда спросите себя, стоит ли использовать солнечную энергию.

Солнечные панели имеют низкие затраты на обслуживание

Солнечные панели просты в обслуживании, поскольку в них нет движущихся частей, которые могут изнашиваться со временем. Содержите их в чистоте и хорошем физическом состоянии для обеспечения их надлежащей работы. Учитывая низкие затраты на техническое обслуживание и средний срок службы в 25 лет, инвестиции в солнечные панели могут легко окупиться.

- Солнечная энергия может генерировать электроэнергию в любом климате

Солнечные энергосистемы могут вырабатывать электроэнергию в любом климате. Одним из недостатков солнечной энергии является то, что она вызывает временные изменения погоды. Пасмурные дни сокращают количество вырабатываемой электроэнергии. Однако холод не влияет на эффективность. Снегопад на самом деле может помочь вашей солнечной системе, поскольку по мере таяния снег очищает панели и увеличивает количество солнечного света, отраженного от снега и попадающего на ваши панели. В результате вырабатывается больше электроэнергии. [10]

Подводя итог: можно сказать, что солнечная энергия — это один из видов возобновляемой энергии. Потенциально они могут сыграть значительную роль в переходе к устойчивому энергетическому будущему, их экологичность, низкое воздействие на окружающую среду и потенциал создания рабочих мест на местном уровне делают их привлекательным вариантом для стран по всему миру. Поскольку мы продолжаем искать альтернативные источники энергии, этот тип энергии становится все более важной частью энергетического баланса.

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УМУМИЙ ЎРТА ТАЪЛИМ МАКТАБИ ЎҚУВЧИЛАРИГА МАТЕМАТИКА ФАНИНИ АХБОРОТ ТЕХНОЛГИЯЛАРИДАН ФОЙДАЛАНИБ ЎҚИТИШ ТАЖРИБА ДАРСЛАРНИ ТАХЛИЛИ

Аннотатсия: *Ушбу мақолада умумий ўрта таълим мактабларида математика дарсларини ахборот технологиялари (АТ) воситаларидан фойдаланган ҳолда ўтказиш тажрибаси таҳлил қилинади. Тажриба давомида АТ воситаларидан фойдаланилган дарслар билан анъанавий дарслар таққосланди ва ўқувчиларнинг баҳолари асосида таҳлил олиб борилди. Натижалар шундан далолат берадики, ахборот технологияларидан фойдаланиш ўқув жараёни самарадорлигини оширади, ўқувчиларда фаоллик, қизиқиш ва дарсни ўзлаштириш даражасини яхшилайди. Мақолада таҳлил натижалари ва илмий-амалий таклифлар келтирилган.*

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TEACHING MATHEMATICS TO GENERAL SECONDARY SCHOOL STUDENTS USING INFORMATION TECHNOLOGY WITH EXPERIMENTAL LESSON ANALYSIS

Abstract: *This article analyzes the use of information technologies (IT) in teaching mathematics in general secondary schools. The study compares IT-assisted lessons with traditional lessons by evaluating students' grades. The results indicate that incorporating IT tools into the teaching process significantly improves the effectiveness of education, enhances student engagement, and facilitates better comprehension of the material. The article provides analytical results and practical recommendations for improving teaching quality through the use of digital resources.*

Keywords: *information technologies, mathematics education, general secondary education, learning effectiveness, e-learning, visualization, teaching methods.*

Кириш. Хар бир жамиятнинг келажаги унинг ажралмас қисм ва хаётий зарурияти бўлган таълим тизимининг қай даражада ривожланганлиги билан белгиланади.Мамлакатимиз келажаги учун ажралмас қисми ва ҳаётий зарурият бўлган таълим тизимини ислоҳ қилиш ва такомиллаштиришни янги босқичга кўтариш унинг илғор педагогик ва ахборот технологияларини жорий этиш ҳамда умумий ўрта таълим мактабларида билим самарадорлигини ошириш сиёсат даражасига кўтарилди. Замонавий технологиялар ўқувчиларни бевосита жараёнга қатнашишларини тақазо этадилар, айниқса умумий ўрта таълим мактабларида компютер технологияларидан фойдаланиш ҳозирга давр талабларидан биридир. Бугунги демократсиялаштирилган дарсларга компютер технологияларини жорий этишнинг ўзига ҳос йўллари ўқув қўланмаларда ўз аксини топган [1.2.]

Умумий ўрта таълим мактабларида мавзуни тушинтиришда компютер технологияларидан фойдаланиш замонавий педагогиканинг энг катта ютуқлардан бири ҳисобланади. [3,4,5]

Электрон жадвал мураккаб ҳисоблашларни ўргатишдаги аҳамияти шундан иборатки электрон жадвал дастури орқали мураккаб айнияларни тушунтириш қуйидаги афзалликларга эга ҳисоблаш формулаларини кўриш орқали ўқувчиларнинг тасаввури яхшиланади. [7]

Жадваллар купчилик холларда қайта ишлатиладиган ҳисоб натижаларини жадваллар кўринишида тасвирлаймиз. Шунинг учун жадвал катакчаларининг бир қисмига бошлангич маълумотлар ва бошқа қисмига бошланғич маълумотлар ва бошқа қисмига эса ҳосил қилинадиган ҳосилавий маълумотлар ёзилади [8].

Бугунги кунда таълим соҳасида ахборот технологияларидан (АТ) фойдаланиш барча фанлар қаторида математика фанини ҳам янада самарали ўқитиш имконини яратади. Замонавий компьютер дастурлари, мультимедиали презентациялар, интерактив платформалар ва виртуал ўқув муҳитлари орқали ўқувчиларнинг фанга қизиқиши ва дарсни ўзлаштириш даражаси ошиши мумкин. Ушбу мақолада умумий ўрта таълим мактабларида АТ воситаларидан фойдаланилган ҳолда ўтилган математика дарсларининг самарадорлиги бўйича олиб борилган тажриба натижалари таҳлил қилинади.

Тажриба мақсади ва усули. Тажрибанинг асосий мақсади – ахборот технологияларидан фойдаланиш математика дарсларида ўқувчиларнинг билим даражасига қандай таъсир кўрсатишини аниқлашдир.

Ушбу тадқиқотда 25 нафар 8-синф ўқувчиси иштирок этди. Тажриба икки қисмда ташкил этилди:

1. Биринчи гуруҳда АТ воситалари (тақдимотлар, электрон дарсликлар, онлайн машқлар) ёрдамида дарс ўтилди.

2. Иккинчи гуруҳда эса анъанавий, яъни АТ воситаларисиз дарс ўтилди.

Дарслардан сўнг ҳар икки гуруҳга назарий билимлар бўйича синовлар ўтказилди ва натижалар баҳоланди.

Натижалар ва таҳлил

Дарс ўтиш шароити	**5 баҳо**	**4 баҳо**	**3 баҳо**	**2 баҳо**	**Ўқувчилар сони**	**Ўртача баҳолар**
АТ билан	10	9	6	0	25	4.16
АТсиз	6	7	12	0	25	3.44

Баҳолардан кўриниб турибдики, АТ воситалари билан ўтилган дарсларда ўқувчилар юқори натижаларга эришган:

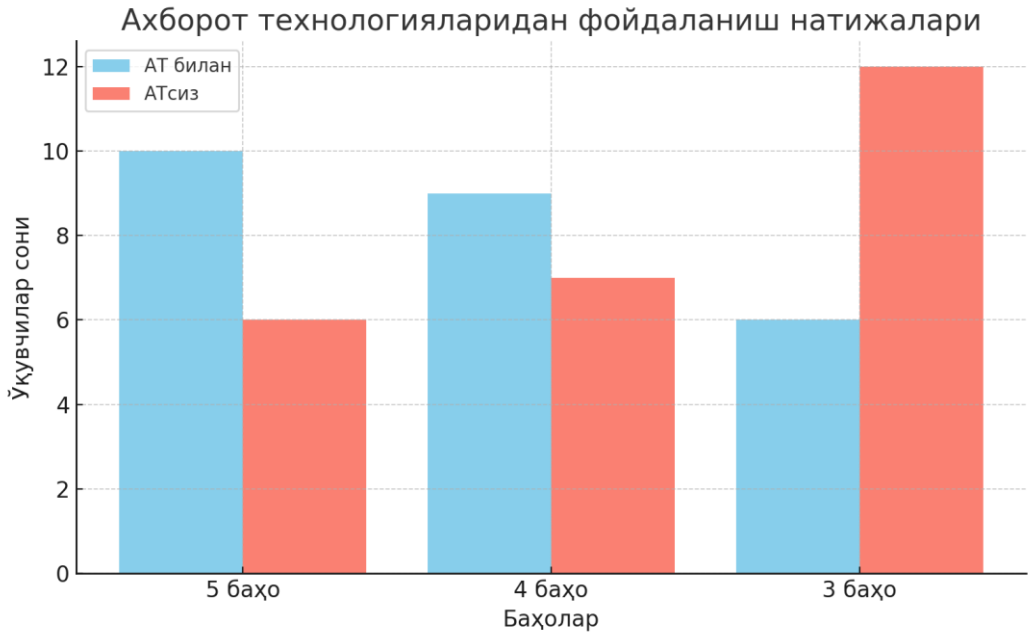
- **5 баҳо олганлар сони** – 10 нафар (АТ билан), 6 нафар (АТсиз);
- **3 баҳо олганлар сони** – 6 нафар (АТ билан), 12 нафар (АТсиз);
- Ҳар икки ҳолатда ҳам 2 баҳо олган ўқувчилар йўқ, бу эса ўқувчиларнинг барчаси дарсни маълум даражада ўзлаштирганлигини кўрсатади.

Ўртача баҳоларнинг фарқи – 0,72 баллни ташкил қилди, бу эса АТ воситалари билим сифатини оширишда муҳим омил эканлигини исботлайди.

Муҳокама. Ахборот технологияларидан фойдаланиш математика дарсларини визуаллаштириш, мураккаб тушунчаларни соддалаштириш ва интерактив ўқув муҳитини шакллантиришда катта рол ўйнайди. Ушбу технологиялар ёрдамида:

- ўқувчиларнинг фаоллиги ошади;
- дарслар қизиқарли ва тушунарли бўлади;
- мустақил таълим ва тезкор фикрлаш кўникмалари ривожланади;
- дарс вақтидан самарали фойдаланиш имкони яратилади.

Ахборот технологияларидан фойдаланиш натижалари диаграммаси



Диаграммада АТ воситалари билан ва АТсиз ўтилган дарсларда ўқувчилар олишган баҳолар таққосланган.

Хулоса ва таклифлар

Тажриба натижалари асосида қуйидаги хулосаларни чиқариш мумкин:

Ахборот технологияларидан фойдаланиш ўқувчиларнинг таълим сифатини оширади.

Математика дарсларини АТ воситалари билан бойитиш ўқувчиларнинг фанга бўлган қизиқишини оширади.

АТ асосида ўқув жараёнини ташкил этиш мактаб таълимида самарадорликни оширишнинг муҳим йўналишларидан бири ҳисобланади.

Барча мактабларда математика дарсларида электрон таълим ресурслари ва мультимедиа дастурларини жорий этиш;

Ўқитувчиларни АТ билан боғлиқ малакаларини ошириш бўйича махсус курслар ташкил қилиш;

Ўқувчилар учун интерактив машқлар, тестлар ва симуляторлар асосида электрон платформаларни яратиш.

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ТЕХНОЛОГИЯ ПЕДАГОГИЧЕСКОГО МОНИТОРИНГА ДЕЯТЕЛЬНОСТИ ДОШКОЛЬНОЙ ОБРАЗОВАТЕЛЬНОЙ ОРГАНИЗАЦИИ

Аннотация: *В данной статье рассматриваются теоретические и практические аспекты технологии педагогического мониторинга деятельности дошкольной образовательной организации. Подчеркивается важность систематического отслеживания и анализа образовательного процесса для повышения качества дошкольного образования. В статье анализируются основные цели, задачи, методы и инструменты педагогического мониторинга, а также рассматриваются условия его эффективной реализации в условиях современного дошкольного учреждения. Представлены подходы к оценке развития детей, квалификации педагогов и организационно-методической деятельности учреждения. Особое внимание уделено внедрению цифровых технологий в мониторинговую деятельность. Работа предназначена для студентов педагогических вузов, преподавателей, а также специалистов в сфере дошкольного образования.*

Ключевые слова: *педагогический мониторинг, дошкольное образование, развитие детей, оценка качества, образовательный процесс, диагностика, педагогическая деятельность, цифровые технологии, педагогические методы, образовательные стандарты.*

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TECHNOLOGY OF PEDAGOGICAL MONITORING OF THE ACTIVITIES OF PRESCHOOL EDUCATIONAL ORGANIZATIONS

Abstract: *This article explores the theoretical and practical aspects of the technology of pedagogical monitoring in the activities of preschool educational organizations. The importance of systematic tracking and analysis of the educational process for improving the quality of preschool education is emphasized. The article examines the main goals, objectives, methods, and tools of pedagogical monitoring, as well as the conditions for its effective implementation in modern preschool institutions. It presents approaches to assessing child development, teacher qualifications, and the organizational-methodological activities of the institution. Special attention is given to the integration of digital technologies into the monitoring process. This work is intended for students of pedagogical universities, educators, and specialists in the field of preschool education.*

Keywords: *pedagogical monitoring, preschool education, child development, quality assessment, educational process, diagnostics, pedagogical activity, digital technologies, teaching methods, educational standards.*

Введение

В условиях модернизации системы образования особое внимание уделяется качеству дошкольного образования, поскольку именно на этом этапе закладываются основы физического, интеллектуального, социального и личностного развития ребенка. Обеспечение высокого уровня качества образовательного процесса в дошкольных образовательных организациях (ДОО) требует внедрения эффективных управленческих и педагогических механизмов, среди которых значимое место занимает технология педагогического мониторинга.

Педагогический мониторинг представляет собой систему постоянного наблюдения, сбора, анализа и интерпретации информации о состоянии и динамике образовательного процесса с целью принятия обоснованных управленческих решений. Это не просто форма контроля, а важнейший инструмент обеспечения обратной связи и адаптации образовательной среды под индивидуальные потребности и особенности развития воспитанников.

В последние годы в практике работы ДОО Узбекистана наблюдается тенденция к активному внедрению мониторинговых технологий, что обусловлено необходимостью повышения прозрачности, результативности и эффективности педагогической деятельности. Однако для успешной реализации мониторинга необходимо не только наличие диагностических инструментов, но и сформированность у педагогов мониторинговой культуры, профессиональной рефлексии, а также владение современными технологиями обработки и анализа информации.

Актуальность исследования технологии педагогического мониторинга определяется также переходом к новым образовательным стандартам, ориентированным на развитие компетенций у дошкольников, а не только на

усвоение знаний. Это требует изменения содержания, форм и методов оценки результатов образовательной деятельности, а также учета целого комплекса факторов, влияющих на развитие ребенка.

Целью данной работы является всесторонний анализ технологии педагогического мониторинга деятельности ДОО, выявление ее основных компонентов, условий эффективности и направлений совершенствования. Работа основывается на анализе научных источников, нормативных документов и практического опыта реализации мониторинга в учреждениях дошкольного образования Узбекистана.

Технология педагогического мониторинга в деятельности дошкольной образовательной организации представляет собой поэтапную и системную процедуру сбора, анализа и оценки информации о ходе и результатах образовательного процесса. Основной задачей мониторинга является своевременное выявление трудностей в развитии воспитанников, эффективности педагогического воздействия, а также обоснование принятия решений по корректировке образовательной деятельности.

Мониторинг в ДОО реализуется по следующим направлениям: мониторинг физического и психического развития ребенка, мониторинг освоения образовательных областей, мониторинг профессиональной деятельности педагогов и мониторинг удовлетворенности участников образовательного процесса. Каждый из этих компонентов требует специальных методик и диагностических средств, адаптированных к возрастным особенностям дошкольников.

Педагогический мониторинг строится на основе принципов системности, научности, непрерывности и конфиденциальности. Он предполагает регулярное проведение наблюдений, анкетирований, тестирований, анализа портфолио ребенка, педагогической диагностики и других методов сбора информации. Данные, полученные в процессе мониторинга, обрабатываются с использованием как традиционных аналитических методов, так и современных цифровых платформ.

Важным компонентом технологии мониторинга является интерпретация результатов и выработка управленческих решений. На основе анализа собранной информации педагогический коллектив разрабатывает индивидуальные маршруты развития воспитанников, корректирует образовательную программу, организует работу с родителями и оказывает методическую поддержку педагогам.

Современная практика демонстрирует эффективность внедрения цифровых технологий в систему мониторинга. Электронные дневники, цифровые диагностические карты, базы данных позволяют существенно повысить объективность, доступность и оперативность оценки, а также вести накопительный учет индивидуальных достижений детей. В условиях цифровизации образования эти инструменты становятся неотъемлемой частью управления качеством дошкольного образования.

Таким образом, педагогический мониторинг в ДОО является не только средством контроля, но и стратегическим ресурсом развития всей образовательной системы. Его эффективность зависит от подготовки педагогических кадров, научно-методического сопровождения, технического обеспечения и нормативной базы.

Заключение

Педагогический мониторинг деятельности дошкольной образовательной организации представляет собой важный механизм повышения качества дошкольного образования. Его значение выходит за рамки традиционного контроля и охватывает более широкие задачи — от диагностики индивидуального развития воспитанников до оценки эффективности педагогических технологий и корректировки образовательного процесса.

Результаты мониторинга позволяют своевременно выявлять проблемы, прогнозировать развитие ребенка, планировать индивидуальные маршруты обучения и воспитания, а также совершенствовать содержание образовательных программ. В современных условиях особую актуальность приобретает внедрение цифровых инструментов мониторинга, которые обеспечивают оперативность, объективность и системность получаемой информации.

Одним из ключевых факторов успешной реализации мониторинга является профессиональная компетентность педагогов. Это предполагает не только умение работать с диагностическими материалами, но и готовность к аналитической деятельности, владение методами интерпретации данных и формулирования управленческих решений. Повышение квалификации педагогических кадров, развитие мониторинговой культуры, обеспечение методического сопровождения — важные условия эффективности мониторинга.

Кроме того, важна организационная поддержка со стороны руководства ДОО, наличие нормативной и методической базы, обеспечение материально-техническими ресурсами и активное вовлечение родителей как участников образовательного процесса. Только при наличии этих условий педагогический мониторинг станет действенным инструментом обеспечения качества и устойчивого развития дошкольного образования.

В целом, педагогический мониторинг следует рассматривать как динамичную, научно обоснованную и практически ориентированную систему, способствующую реализации целей дошкольного образования в контексте современных требований и приоритетов образовательной политики Узбекистана.

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ДЕТСКИЕ ОБРАЗЫ В ПРОИЗВЕДЕНИЯХ Ч. ДИККЕНСА И Л. АНДРЕЕВА

Аннотация: *В данной статье рассматриваются различные подходы к изображению детей в произведениях Чарльза Диккенса и Леонида Андреева. Образ ребенка у этих авторов может быть воспринят как жертва жестоких социальных условий или как символ высших духовных ценностей, а также как опора для взрослых, утрачивающих эти ценности.*

Ключевые слова: *образ ребенка, социальная жертва, мир природы, духовная опора, высший суд, оптимизм, пессимизм, декаданс.*

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CHILDREN'S IMAGES IN THE WORKS OF CH. DICKENS AND L. ANDREEV

Annotation: *This article examines different approaches to the depiction of children in the works of Charles Dickens and Leonid Andreyev. The image of the child in these authors' works can be seen either as a victim of harsh social conditions or as a symbol of higher spiritual values, as well as a support for adults who have lost these values.*

Keywords: *image of the child, social victim, the world of nature, spiritual support, higher judge, optimism, pessimism, decadence.*

Образ ребенка как центрального или важного героя начал появляться в европейской литературе в первой половине XIX века. Первыми писателями, которые придали детям особое идеологическое значение, были Чарльз Диккенс в Англии и Виктор Гюго во Франции. В русскую литературу образы детей пришли с произведениями Льва Толстого, такими как «Детство» и «Отрочество», а позже они ярко проявились в творчестве Федора Достоевского, Антона Чехова, Николая Гарина-Михайловского и других авторов. Леонид Андреев также не обошел тему детства стороной. Хотя в его

творчестве существует всего несколько рассказов, посвященных детям, эти произведения представляют интерес для анализа и позволяют оценить многогранность подхода автора к данной теме. Оригинальность подхода Леонида Андреева к изображению ребенка раскрывает эволюцию литературной традиции в его произведениях по сравнению с тем, как эту тему обрабатывал Чарльз Диккенс [1, 103], которого, судя по его высказываниям и упоминаниям в фельетонах, Л. Андреев хорошо знал и высоко ценил [2,98].

Как известно, судьба и роль ребенка в современном обществе глубоко волновали Диккенса, который, пережив в детстве опыт долговой тюрьмы, тяжелого труда и голода, проникся этим в своих произведениях. Уже его первый роман, в котором он отразил эти мрачные воспоминания, потряс читателей и стал причиной реформы закона о бедных, за которую долгое время боролись, но безуспешно. Однако задача Диккенса не ограничивалась лишь изображением жестокой эксплуатации беззащитных детей, брошенных на самое дно общества. Он стремился найти духовную опору для человека в этом жестоком и противоречивом мире, и образ ребенка стал для него важнейшим символом духовной чистоты, добра и внутренней силы. Новый приход в мир, дети хранили в себе уникальный духовный потенциал, который взрослые часто бессознательно растрачивали. Поэтому у Диккенса дети часто становились поддержкой и ориентиром для заплутавших взрослых.

Многие из тем, затронутых в произведениях Чарльза Диккенса о детях, также встречаются в рассказах Леонида Андреева. Как отмечают исследователи его творчества, такие как Е. Панкова, Л. Кен и Н. Борзова, Андреев, как и Диккенс, не писал произведений для детей; его рассказы о детях были направлены к взрослой аудитории[3, 150]. Детская проблематика в творчестве Андреева близка к Диккенсу, однако она наполнена индивидуальными особенностями, что придает произведениям Андреева уникальную атмосферу. Также можно отметить еще одну схожую черту — глубокую чувствительность обоих писателей к новым течениям в литературе своего времени. В позднем Диккенсе прослеживаются черты натурализма и символизма, а в творчестве Андреева уже заметно влияние импрессионизма, экспрессионизма и декаданса. Интересно, что влияние Диккенса особенно ощущается в тех рассказах Андреева, которые имеют наиболее пессимистичный характер. Это позволяет не только провести параллели между подходами двух авторов, но и проанализировать различия в их изображении детских образов.

Образ Саши в рассказе Леонида Андреева «Ангелочек» глубоко символичен и многослоен. Время действия — Рождество — навевает ассоциации с «Рождественскими рассказами» Чарльза Диккенса, в которых звучат похожие мотивы возрождения и просветления души. Сюжет Андреева, несмотря на свою внешнюю простоту, полон скрытого трагизма. Одним-двумя яркими штрихами автор рисует судьбу тринадцатилетнего подростка, только что исключённого из гимназии. Его озлобленность, направленная против жестокой матери и лицемерных «благодетелей», когда-то устроивших

его в учебное заведение, становится понятной лишь в конце, когда читатель узнаёт историю его отца. Эта история, напоминающая роман Ж.Ж. Руссо о страстной любви бедного учителя к богатой ученице, вероятно, известна и самому Саше. Поэтому именно он приносит своему несчастному и слабому отцу ангелочка с ёлки, ангела, за которого он умолял на коленях у благодетельницы. Отец верит, что это посланница его прошлого, и его вера подтверждается: ангел действительно приносит радость. Отец и сын, счастливые и умиротворённые, засыпают, а ангел, повешенный на печке, тает — так же, как и их временное счастье. Внутренний смысл рассказа в том, что Саша, не осознавая этого, безнадёжно ищет в мире, полном дисгармонии, справедливость, красоту и смысл. В Рождественскую ночь для него ангел становится воплощением этой красоты и добра, способной принести хоть малую радость и утешение его измученной душе, а также душе его несчастного отца. Однако радость в этом мире столь же мимолётна и хрупка, как восковой ангел — она исчезает так же быстро, как появляется. И в этом состоит важное отличие рассказа Андреева от «Рождественских рассказов» Диккенса. Если в рассказах Диккенса духи Рождества могут воскресить душу, исцелить её и изменить жизнь, то для Андреева ангелочек — это лишь обещание, которое так и остаётся невыполненным. В мире Андреева нет места для оптимизма: мироздание здесь наполнено трагизмом и пессимизмом, где даже самые светлые моменты быстро тают.

В начале статьи мы кратко перечислили основные задачи, которые решал в своих произведениях Ч. Диккенс, вводя в них образы детей. Те же задачи характерны и для детских образов Л. Андреева. Единственным исключением является отсутствие исследования становления личности, что не удивительно, поскольку жанр рассказа, которым пользуется Андреев, гораздо меньше по объему, чем роман, которым пользуется Диккенс, и исследовать в рамках рассказа проблему становление личности практически невозможно. Можно упомянуть рассказ «Молодежь», но здесь речь идет не о становлении личности, а об осознании юношей своей моральной ошибки и плате за нее. Однако для него, как и для Ч. Диккенса, образ ребенка, даже страдающего и угнетенного, остается главной надеждой на духовное спасение и главной духовной опорой взрослых в этом непростом мире.

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ПРЕДОТВРАЩЕНИЕ ЭРОЗИИ ПОЧВЫ НА ПОСЕВНЫХ ПОЛЯХ

Аннотация. *Эрозия почвы считается серьезной проблемой во всем мире. Потеря почвы с поверхности суши в результате эрозии широко распространена и снижает продуктивность ряда экосистем, включая посевные площади и леса. Эрозия почвы является основным ограничением для сельского хозяйства, влияющим на урожайность.*

Ключевые слова: *почва, эрозия, плодородие, урожайность, эрозия, урбанизация, индустриализация, рекультивация, продовольствие, изменение климата, опустынивание.*

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PREVENTION OF SOIL EROSION IN CROP FIELDS

Annotation. *Soil erosion is considered a serious problem worldwide. Soil loss from the land surface as a result of erosion is widespread and reduces the productivity of a number of ecosystems, including acreage and forests. Soil erosion is a major constraint for agriculture, affecting yields.*

Keywords: *soil, erosion, fertility, yield, erosion, urbanization, industrialization, reclamation, food, climate change, desertification.*

Сегодня понятие эрозии почвы широко интерпретируется. Урбанизационные процессы, рост населения и индустриализация приводят к максимальному использованию земель.

Почва - это цикл, связанный с рядом экосистемных услуг, таких как доставка пищи, кормов, волокна, древесины, регулирование секвестрации углерода, поддержка среды обитания человека, регулирование воды и питательных веществ.

С изменением климатических условий эта экосистема может столкнуться с многогранными угрозами, такими как снижение улавливания и хранения углерода, высокий уровень эрозии. Непосредственное влияние оказывают увеличение кратковременных осадков, использование земель под воздействием климата, изменение земельного покрова и др. Кроме того, с ростом населения растет потребность во всё большем количестве земли для выращивания сельскохозяйственных культур и других целей, что ухудшает состояние почвы и увеличивает вероятность эрозии почвы. Под эрозией почвы обычно понимается разрушение почвы под воздействием природных явлений (например, воды, ветра, снега) и техногенных факторов (например, интенсивного и экстенсивного земледелия).

В настоящее время проблема эрозии почвы обсуждается рядом исследователей в сочетании со стратегиями смягчения. В частности, были определены годовые темпы эрозии почв и процент потерянных в осадках почв, подвергшихся дислокации, и сделана попытка подчеркнуть, что основными факторами потери почв являются изменение климата и антропогенное землепользование в холодных пустынных зонах и засушливых районах. Другие заслуживающие внимания исследования предоставили пространственные и количественные данные о потерях почвы. Существует множество программ и инициатив, связанных с эрозией почв, которые не только сосредоточены на оценке деградации земель в результате эрозии, но и предлагают некоторые профилактические меры, такие как восстановление естественной растительности и сбор дождевой воды, которые уменьшают почву.

С глобализацией и ростом городского населения расширяются посевные площади для удовлетворения потребностей в продовольствии и кормах. Эрозия почвы и связанное с ней разрушение сельскохозяйственных угодий на протяжении многих лет привели к потере посевных площадей и снижению продуктивности оставшихся земель. Потеря посевных площадей часто приводит к созданию новых посевных площадей из лесов и пастбищ, и возникает необходимость обогащения этих новых посевных площадей азотными и фосфорными удобрениями. Кроме того, эрозия почвы снижает ценное разнообразие растений, животных и почвенных микроорганизмов.

Одной из экосистемных услуг, предоставляемых растениями, является влияние растительного покрова на смягчение эрозии почвы, что делает его эффективным инструментом предотвращения негативного воздействия эрозии почвы. Растительный покров имеет решающее значение для защиты

поверхности почвы от капель дождя. К ним относятся распыление, увеличение содержания органического вещества в почве, стабильность почвенных агрегатов, водоудерживающая способность, гидравлическая проницаемость, замедление и уменьшение поверхностного стока воды и другие. Однако эта защитная эрозия почвы зависит от ряда факторов, включая тип растительного покрова, его плотность и другие характеристики. Растительный покров с меньшей плотностью менее эффективен в предотвращении загрязнения почвы. По сравнению с чрезвычайно плотным растительным покровом, эрозия ускоряется из-за наличия большего количества голой почвы под растительным покровом, подверженной эрозии.

Система экологического экономического учета определяет услуги по борьбе с эрозией почвы как экосистемные вклады, которые снижают потери почвы и поддерживают использование окружающей среды, в частности, как стабилизирующее воздействие растений. Факторами, влияющими на функционирование этой экосистемы, являются, главным образом, топология; геология и тип почвы; тип и состояние растений, особенно их структурное состояние, режим осадков и т.д. Независимо от типа почвенного покрова, сложно определить основной предел предоставления каких-либо услуг для оценки услуг по предотвращению эрозии почв. Для оценки эрозии почв используется такой подход, который сравнивает фактические уровни эрозии для пустынь с максимальным потенциальным уровнем эрозии в данной экосистеме, предполагая, что тип почвы и другие факторы, такие как степень эрозии, характеристики склона, характеристики осадков и факторы землеустройства, являются постоянными.

Эта статья пытается подчеркнуть важность наличия точных знаний о землепользовании, прежде чем принимать решения о соответствующем основном земельном участке при расчете любой экосистемы. Основной земельный покров нельзя определить в общем виде следующим образом: необходимо учитывать многие другие факторы, такие как изменение динамики земель со временем, существующие методы управления, растительность, составляющая часть неплодородной земли, и другие. Изменённый земельный покров может помочь определить земельный покров/экосистему, которая вносит максимальный вклад в экосистему. Поэтому основное условие определения экосистемных услуг имеет решающее значение.

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ВЗАИМОСВЯЗЬ ЮМОРА И АДАПТАЦИОННОГО ПОТЕНЦИАЛА ЛИЧНОСТИ

Аннотация*: в современном мире, полном стресса и неопределенности, особое внимание уделяется тому, как люди справляются с психоэмоциональными нагрузками и адаптируются к постоянно меняющимся условиям жизни. Одним из наиболее универсальных и эффективных средств психической защиты является юмор. Он не только способствует снятию напряжения, но и формирует более устойчивую и гибкую личность, способствующую успешной адаптации в различных жизненных ситуациях.*

Ключевые слова*: юмор, адаптация, потенциал, личность, психическая защита.*

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THE RELATIONSHIP BETWEEN HUMOR AND THE ADAPTIVE POTENTIAL OF THE INDIVIDUAL

Abstract: *In a modern world full of stress and uncertainty, special attention is paid to how people cope with psychoemotional stresses and adapt to constantly changing living conditions. Humor is one of the most universal and effective means of mental protection. It not only helps to relieve tension, but also forms a more stable and flexible personality, contributing to successful adaptation in various life situations.*

Keywords: *humor, adaptation, potential, personality, mental protection.*

Юмор представляет собой одну из важнейших составляющих человеческой жизни, которая играет значительную роль в психической адаптации индивида. Он не только служит средством коммуникации и самоидентификации, но и становится мощным инструментом для преодоления трудных жизненных ситуаций, позволяя человеку сохранить психическое здоровье и повысить адаптационный потенциал.

На уровне психологии юмор можно рассматривать как механизм защиты [5]. Так, использование юмора в трудных обстоятельствах может помогать человеку справляться с тревогой и стрессом, создавая тем самым пространство для эмоционального облегчения. Употребление шуток и

комических ситуаций позволяет снизить уровень непосредственного стресса, что в свою очередь способствует более адекватной реакции на окружающие вызовы. Это подтверждается исследованиями в области психологии, которые указывают на то, что люди, умеющие шутить или видеть смешные стороны даже в сложных ситуациях, чаще всего демонстрируют высокий уровень адаптации и меньше подвержены депрессии и тревожности. Кроме того, юмор может служить связующим звеном между людьми. Взаимодействие через юмор способствует формированию социальных связей, что также является важной составляющей адаптационного процесса. Наличие поддерживающего окружения, в котором люди могут выражать свои чувства и делиться смешными моментами, усиливает чувство принадлежности и уменьшает чувство одиночества. Эти социальные аспекты, в свою очередь, способствуют улучшению морального и эмоционального состояния личности, что положительно сказывается на ее способности адаптироваться.

На индивидуальном уровне интересен тот факт, что восприимчивость к юмору может отражать особенности личностной структуры. Люди с высоким уровнем креативности и развитым чувством юмора зачастую оказываются более гибкими в решении проблем и лучше справляются с неопределенностью. Они способны переключать свое внимание с негативных факторов на более позитивные аспекты, что помогает им легче принимать и адаптироваться к изменениям.

Таким образом, можно утверждать, что юмор тесно связан с адаптационным потенциалом личности. Он не только служит мощным инструментом защиты от психологических напряжений и стрессов, но и способствует формированию положительных социальных связей, укреплению психоэмоционального состояния и повышению общей готовности личности к изменяющимся условиям жизни. В общем, развитие чувства юмора может рассматриваться как важный аспект на пути к успешной адаптации и психологическому комфорту человека. Также, юмор может быть одним из компонентов адаптационного потенциала личности. Он обеспечивает социально-приемлемую форму самопрезентации в проблемных ситуациях, входит в систему личностного самосохранения. Некоторые аспекты взаимосвязи юмора и адаптационного потенциала личности [4]. Юмор помогает справляться со стрессом. Он позволяет посмотреть на ситуацию под другим углом, переосмыслить проблему, найти положительные моменты, не относиться к проблеме как к чему-то губительному, а наоборот обрести силы и ресурс для ее разрешения с помощью позитивного мышления. Юмор развивает креативность, творческое мышление, гибкость и адаптивность. Выход из трудностей посредством юмора, необычные решения помогают человеку быстрее адаптироваться под проблему, позитивно мыслить, уменьшать стресс и негативное восприятие.

Юмор облегчает переживания сложного периода. Он помогает не относиться к проблеме как к чему-то губительному, а наоборот обрести силы и ресурс для ее разрешения с помощью позитивного мышления. Юмор

сближает людей. Юмор укрепляет дружбу, семейные отношения и профессиональные связи. Совместный смех способствует формированию доверия и созданию положительной атмосферы, где люди чувствуют себя комфортно и могут быть собой [1]. Однако роль юмора в преодолении стресса неоднозначна. Разнообразие стилей, типов и контекстов использования юмора не позволяет чрезмерно упрощенно рассматривать эту копинг-стратегию. Рассмотрим, какие стили юмора наиболее эффективны для адаптации. **Аффилиативный и самоподдерживающий стили юмора** считаются адаптивными и эффективными для адаптации [2]. **Аффилиативный стиль** направлен на создание социальной связи или укрепление групповой динамики. Он помогает разрядить обстановку, снизить уровень конфликтов и уменьшить напряжение внутри коллектива. **Самоподдерживающий стиль** включает самоиронию и служит защитным механизмом от стресса и страха. Такой юмор помогает планировать решение проблемы, обеспечивает позитивный взгляд на исход трудной ситуации и позволяет выстроить пути выхода из нее. **Агрессивный и самоуничижительный стили** считаются неадаптивными и потенциально вредными. Агрессивный юмор выражается через сарказм и может демонстрировать силу и доминирование. Самоуничижительный юмор помогает смягчить ситуацию и снять напряжение, когда человек смеется над собой. Однако стоит учитывать, что каждый человек уникален и имеет свои предпочтения в юморе.

В заключение, рассмотрение взаимосвязи между юмором и адаптационным потенциалом личности подчеркивает важность юмора как мощного средства психической защиты. Юмор, действующий как адаптивный механизм, играет ключевую роль в процессе преодоления трудных жизненных ситуаций, обеспечивая эмоциональное облегчение, способствуя развитию креативности и гибкости мышления, а также укрепляя социальные связи между людьми. Это благодаря способности юмора помочь человеку взглянуть на проблему с другой стороны, переосмысливать свои переживания и находить положительные аспекты даже в самых сложных условиях. Доказано, что использование аффилиативного и самоподдерживающего стилей юмора способствует улучшению морального и эмоционального состояния, что в свою очередь повысит общий уровень адаптации личности. Эмоциональное сближение, возникшее в результате совместного смеха, способствует созданию поддерживающей среды, которая невероятно важна для психологического благополучия. Однако необходимо учесть, что не все стили юмора оказывают равное влияние на адаптацию. Агрессивные и самоуничижительные формы юмора могут быть контрпродуктивными и отрицательно сказаться на психоэмоциональном состоянии. Поэтому индивидуальные предпочтения в использовании юмора играют важную роль в определении его эффективности как защитного механизма [3]. Таким образом, юмор можно рассматривать не только как средство снятия стресса, но и как важный компонент адаптационного

потенциала личности, способствующий формированию более устойчивой психологической структуры и продвигающий человека к большей гибкости в восприятии жизненных вызовов. Юмор, будучи неотъемлемой частью человеческой жизни, способен наполнять ее смыслом и облегчать трансформацию в условиях постоянно меняющегося мира.

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ИННОВАЦИОННЫЕ СТРАТЕГИИ ОПТИМИЗАЦИИ МАРШРУТОВ В МЕЖДУНАРОДНОЙ ЛОГИСТИКЕ: КЕЙС ЦЕНТРАЛЬНОЙ АЗИИ

Аннотация: *в статье анализируются современные инновационные стратегии оптимизации маршрутов в международной логистике с акцентом на их применение в Центральной Азии. Рассмотрены теоретические и технологические основы маршрутизации, включая использование математических моделей, цифровых платформ, искусственного интеллекта и больших данных. Особое внимание уделено практическому опыту стран региона по внедрению мультимодальных перевозок и цифровых решений. Обсуждаются основные проблемы и ограничения, сдерживающие внедрение инноваций: инфраструктурные, регуляторные, кадровые и финансовые. Предложены рекомендации по дальнейшему развитию маршрутизации и повышению конкурентоспособности логистики Центральной Азии на международном уровне.*

Ключевые слова: *международная логистика, оптимизация маршрутов, Центральная Азия, цифровизация, мультимодальные перевозки, искусственный интеллект, устойчивое развитие*

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INNOVATIVE ROUTE OPTIMIZATION STRATEGIES IN INTERNATIONAL LOGISTICS: THE CASE OF CENTRAL ASIA

Abstract: *the article analyzes modern innovative route optimization strategies in international logistics, with a focus on their application in Central Asia. It examines the theoretical and technological foundations of routing, including the use of mathematical models, digital platforms, artificial intelligence, and big data. Special attention is given to the practical experience of countries in the region implementing multimodal transportation and digital solutions. The main challenges and limitations hindering the adoption of innovations—such as infrastructural, regulatory, personnel, and financial constraints—are discussed. The study offers recommendations for further development of routing and enhancing the competitiveness of Central Asia’s logistics in the international arena.*

Keywords: *international logistics, route optimization, Central Asia, digitalization, multimodal transportation, artificial intelligence, sustainable development*

Введение

В условиях глобализации и цифровизации международная логистика приобретает стратегическое значение для обеспечения эффективного движения товаров между регионами мира. Одним из ключевых факторов конкурентоспособности логистических компаний становится оптимизация маршрутов, позволяющая снижать издержки, сокращать время доставки и минимизировать риски, связанные с перебоями в поставках. Особенно актуальной данная задача становится для регионов с развивающейся транспортной инфраструктурой и сложными транзитными маршрутами, к числу которых относится Центральная Азия.

Центральная Азия, расположенная на пересечении важнейших торговых путей между Европой и Азией, играет значительную роль в международных цепочках поставок. Страны региона активно развивают транспортно-логистические коридоры, стремясь повысить свою транзитную привлекательность и интегрироваться в глобальные торговые сети. В этом контексте применение инновационных стратегий оптимизации маршрутов становится необходимым условием повышения эффективности и устойчивости логистических процессов.

Современные вызовы, включая высокую волатильность рынков, геополитическую нестабильность, рост экологических требований и нехватку квалифицированных кадров, требуют поиска новых решений в управлении маршрутами перевозок. Цифровизация, внедрение систем искусственного интеллекта, использование больших данных (Big Data) и развитие мультимодальных перевозок открывают новые возможности для повышения эффективности международной логистики.

Целью настоящего исследования является анализ современных инновационных стратегий оптимизации маршрутов в международной логистике с акцентом на их применение в Центральной Азии. В статье рассматриваются теоретические основы и современные технологии оптимизации маршрутов, анализируются примеры практического внедрения инновационных решений в странах региона, а также выявляются существующие проблемы и предлагаются рекомендации по дальнейшему развитию.

Методология исследования основана на анализе научной литературы, международных и региональных отчетов, а также обобщении практического опыта логистических компаний Центральной Азии.

1. Теоретические и технологические основы оптимизации маршрутов

Оптимизация маршрутов в международной логистике представляет собой комплекс мероприятий, направленных на определение наиболее

эффективных путей доставки грузов с учётом множества факторов: времени, затрат, безопасности, устойчивости и качества обслуживания клиентов. Теоретические основы оптимизации маршрутов базируются на применении математических моделей, алгоритмов принятия решений, а также современных цифровых технологий, позволяющих обрабатывать и анализировать большие объёмы данных в реальном времени.

Теоретические подходы и модели

Классические математические модели маршрутизации включают в себя задачу коммивояжёра, проблему маршрутизации транспортных средств (VRP) и их многочисленные модификации, позволяющие учитывать ограничения по весу, объёму, времени доставки и специфике грузов. Стохастические методы и вероятностные модели применяются для учёта неопределённости, связанной с задержками, погодными условиями и другими факторами риска.

На более высоком уровне оптимизация маршрутов может включать многокритериальный анализ, позволяющий сбалансировать различные параметры эффективности, такие как минимизация затрат, сокращение времени доставки и снижение воздействия на окружающую среду.

Роль цифровизации и современных технологий

Цифровизация стала ключевым фактором трансформации процесса планирования маршрутов. Инновационные программные решения, такие как системы управления транспортом (TMS), платформы управления цепочками поставок (SCM) и интегрированные ERP-системы, позволяют автоматизировать планирование маршрутов, отслеживание транспортных средств и мониторинг выполнения поставок.

Особое значение приобрели технологии искусственного интеллекта (AI) и машинного обучения (ML), которые анализируют исторические данные, предсказывают возможные задержки и предлагают оптимальные маршруты с учётом текущей ситуации на дорогах, погодных условий и уровня загруженности транспортной инфраструктуры.

Большие данные (Big Data) используются для анализа потоков товаров, поведения клиентов и рыночных тенденций. С их помощью компании могут адаптировать маршруты в режиме реального времени, реагируя на изменяющиеся условия и минимизируя влияние непредвиденных факторов.

Глобальные тренды

Мировая практика демонстрирует несколько устойчивых тенденций в области оптимизации маршрутов:

1. **Мультимодальные перевозки** — комбинирование различных видов транспорта для сокращения времени доставки и оптимизации затрат.
2. **Устойчивое развитие** — выбор маршрутов с минимальным уровнем выбросов углекислого газа и внедрение экологически чистых видов транспорта.

3. **Гибкие и адаптивные маршруты** — возможность быстрого изменения маршрута в ответ на форс-мажорные обстоятельства или изменение условий перевозки.

4. **Развитие облачных платформ и IoT** — использование интернета вещей для мониторинга состояния транспорта и груза.[1,с.352]

В совокупности эти теоретические и технологические основы создают предпосылки для эффективного планирования и оптимизации маршрутов в условиях современной международной логистики.

2. Практика и инновации в Центральной Азии

Центральная Азия, располагаясь на пересечении ключевых торговых маршрутов между Европой и Азией, обладает значительным потенциалом для развития инновационных логистических решений. В последние годы страны региона активно внедряют современные технологии и стратегии оптимизации маршрутов, стремясь повысить эффективность транспортных операций и укрепить свои позиции в глобальных цепочках поставок.

Особенности инфраструктуры региона

Логистическая инфраструктура Центральной Азии характеризуется как возможностями, так и ограничениями. С одной стороны, Казахстан, Узбекистан и другие страны региона располагают разветвлённой сетью автомобильных и железных дорог, а также доступом к международным транспортным коридорам, таким как TRACECA и коридоры инициативы «Один пояс — один путь» (BRI). С другой стороны, инфраструктурные ограничения — изношенность дорог, недостаток современных логистических центров и ограниченная пропускная способность некоторых направлений — продолжают оказывать негативное влияние на эффективность перевозок.

Несмотря на эти сложности, страны региона активно инвестируют в модернизацию транспортных сетей. В Казахстане реализуются масштабные проекты по строительству и реконструкции автомобильных дорог в рамках программы «Нұрлы жол», а также развитие мультимодальных логистических центров, таких как «Хоргос – Восточные ворота», обеспечивающих эффективную интеграцию автомобильного, железнодорожного и морского транспорта.

Внедрение цифровых решений

Одним из ключевых направлений инноваций является цифровизация логистики. В Казахстане и Узбекистане активно внедряются системы электронного документооборота, автоматизированные платформы планирования маршрутов и GPS-мониторинга. Электронные транспортные накладные и системы автоматизированного декларирования грузов позволяют значительно сократить время оформления и повысить прозрачность логистических операций.

Частные логистические компании региона интегрируют в свои операционные процессы решения на основе искусственного интеллекта и машинного обучения для прогнозирования оптимальных маршрутов и

адаптации к изменяющимся условиям. Использование Big Data помогает анализировать исторические данные перевозок, выявлять узкие места и прогнозировать загрузку маршрутов.

Развитие мультимодальных перевозок

Центральноазиатские государства активно развивают мультимодальные перевозки, что позволяет оптимизировать маршруты с учётом времени, затрат и экологических требований. Например, транзитные маршруты, соединяющие Китай с Европой через Казахстан и Каспийское море (Средний путь), становятся всё более популярными благодаря снижению времени доставки по сравнению с морскими маршрутами и возможности гибко комбинировать различные виды транспорта.

Инновации частного сектора и государственные инициативы

Частные компании региона демонстрируют высокую адаптивность и готовность к внедрению инновационных стратегий. Крупные перевозчики инвестируют в обновление автопарка, установку систем мониторинга и обучение персонала современным методам планирования маршрутов.

На государственном уровне реализуются программы поддержки цифровизации и устойчивого развития транспорта. Казахстан, в частности, разрабатывает стратегию перехода на экологически чистые виды транспорта и внедряет налоговые стимулы для компаний, инвестирующих в инновационные технологии. [2,с.288]

Примеры успешной оптимизации

Кейс компании **“Expert Logistic Kazakhstan” LLP** иллюстрирует успешное применение цифровых решений для оптимизации маршрутов и сокращения издержек. Внедрение программных решений для планирования маршрутов позволило компании повысить эффективность перевозок, минимизировать время простоев и снизить топливные затраты. Кроме того, активное участие компании в международных транспортных инициативах обеспечило расширение географии перевозок и укрепление позиций на рынке.

3. Проблемы и ограничения при внедрении инновационных стратегий

Несмотря на значительные успехи и активное внедрение инновационных подходов к оптимизации маршрутов в международной логистике Центральной Азии, в регионе сохраняется ряд серьёзных проблем и ограничений, которые препятствуют полному раскрытию потенциала новых технологий и стратегий.

Инфраструктурные ограничения

Одной из основных проблем остаётся состояние транспортной инфраструктуры. Несмотря на модернизацию ключевых коридоров, во многих странах региона дорожные сети, логистические терминалы и пограничные переходы требуют дальнейших инвестиций и обновления. Изношенность дорожного полотна, нехватка современных мультимодальных терминалов и ограниченная пропускная способность транспортных узлов приводят к задержкам и увеличению издержек перевозчиков. Кроме того,

погодные и географические особенности региона (например, горные участки дорог) создают дополнительные сложности для маршрутизации.

Регуляторные и административные барьеры

Регуляторные различия между странами Центральной Азии усложняют внедрение единых стандартов цифровизации и автоматизации логистических процессов. Различия в требованиях к документам, процедурных регламентах и стандартах безопасности увеличивают административные издержки и замедляют прохождение грузов через границы. Несмотря на участие большинства стран региона в международных инициативах по упрощению торговли и транспорта (например, ЦАРЭС, ЕАЭС), процесс унификации регуляторных норм продвигается медленно. [3,с.112]

Кадровый дефицит

Недостаток квалифицированных кадров является ещё одним серьёзным ограничением. Высокие требования к профессиональной подготовке специалистов по цифровой логистике, управлению цепями поставок и аналитике данных не всегда могут быть удовлетворены существующей системой образования и профессиональной подготовки в регионе. Компании вынуждены самостоятельно обучать персонал новым технологиям, что требует времени и дополнительных инвестиций.

Финансовые ограничения

Внедрение современных цифровых платформ, систем искусственного интеллекта и оборудования для мониторинга маршрутов требует значительных финансовых вложений. Малые и средние предприятия, составляющие значительную часть логистического сектора Центральной Азии, часто не располагают достаточными ресурсами для инвестиций в инновационные технологии. Хотя некоторые страны региона предоставляют налоговые льготы и другие формы поддержки, их объёмы ограничены и не всегда охватывают все потребности бизнеса.

Внешнеполитические и экономические риски

Геополитическая нестабильность, санкционные ограничения и колебания мировых цен на топливо также влияют на логистический сектор региона. Эти факторы могут неожиданно изменять условия перевозок, ограничивать доступ к отдельным рынкам или маршрутам и увеличивать стоимость логистических операций.

Таким образом, успешное внедрение инновационных стратегий оптимизации маршрутов в Центральной Азии требует комплексного подхода, включающего модернизацию инфраструктуры, гармонизацию нормативных требований, развитие кадрового потенциала и создание благоприятных условий для инвестиций в новые технологии. [4,с.85]

Заключение

Оптимизация маршрутов в международной логистике приобретает всё большее значение в условиях глобальной конкуренции, цифровизации и необходимости повышения устойчивости цепочек поставок. Центральная Азия, обладая стратегическим положением между Европой и Азией, активно

внедряет инновационные стратегии и технологии для повышения эффективности транспортных операций и расширения своей роли в глобальных торговых коридорах.

Проведённый анализ показал, что в регионе применяются современные подходы к оптимизации маршрутов, включая использование цифровых платформ, искусственного интеллекта, систем мониторинга в реальном времени и мультимодальных схем перевозок. Примеры успешной реализации таких стратегий в Казахстане и соседних странах демонстрируют потенциал инноваций для сокращения затрат, повышения скорости и надёжности перевозок.

Тем не менее, остаются значительные вызовы. Инфраструктурные ограничения, несогласованность нормативно-правовых требований между странами, кадровый дефицит и ограниченные финансовые ресурсы сдерживают широкое распространение инновационных решений. Геополитические и экономические риски также оказывают влияние на стабильность логистических процессов.

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ПРОБЛЕМЫ ИНФОРМАЦИОННОЙ БЕЗОПАСНОСТИ ПРИ ЗАЩИТЕ ВОЗДУШНОГО ПРОСТРАНСТВА ОТ БЕСПИЛОТНЫХ ЛЕТАТЕЛЬНЫХ АППАРАТОВ

Аннотация: *в статье раскрыты особенности защиты воздушного пространства от беспилотных летательных аппаратов. Описаны вопросы обеспечения информационной безопасности при защите воздушного пространства от беспилотных летательных аппаратов, а также методы и средства защиты.*

Ключевые слова: *информационная безопасность, защита информации, промышленный шпионаж, беспилотные летальные аппараты, дроны, беспилотники, фотосъемка, видеосъемка.*

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PROBLEMS OF INFORMATION SECURITY IN THE PROTECTION OF AIRSPACE FROM UNMANNED AERIAL VEHICLES

Abstract: *the article reveals the features of the protection of airspace from unmanned aerial vehicles. The issues of ensuring information security in the protection of airspace from unmanned aerial vehicles, as well as methods and means of protection are described.*

Keywords: *information security, information protection, industrial espionage, unmanned aerial vehicles, drones, drones, photography, videography.*

Количество беспилотных летательных аппаратов ежегодно увеличивается из-за снижения стоимости на производство и значительное расширение сфер применения. На данный момент широкое применение

дроны получили в сфере строительства, транспорта, телевещания, сельском хозяйстве, военной отрасли и др. При этом беспилотные летательные аппараты могут стать причиной многих инцидентов информационной безопасности.

Полеты беспилотников должны быть в соответствии с законодательством Российской Федерации. Поэтому физические и юридические лица должны знать и выполнять правила запуска и использования, установленные законодательством. На территории РФ есть определенные зоны, в которых запуск и полёт беспилотных летательных аппаратов воспрещен без специального разрешения лица, в распоряжении которого находится защищаемая зона, или организации.

Попадание дронов на объекты критической инфраструктуры подвергает угрозе физическую и информационную безопасность компании. Высокотехнологичная разработка в руках злоумышленников может применяться в промышленном шпионаже, вторжении в частную жизнь и умышленном нанесении ущерба для компании. Также беспилотники могут нанести ущерб людям, если они упадут или сбросят взрывчатое устройство, несанкционированный полет, например, над нефтяным заводом может привести к угрозе для экологии и работы объекта, а попадание дронов в самолет может привести к аварии. Еще одной угрозой применения беспилотных летательных аппаратов является перевозка запрещенных веществ.

Чтобы минимизировать возникающие риски применения дронов следует своевременно реагировать на новые изменения в сфере разработки беспилотных летательных аппаратов, обеспечивать мониторинг и защиту воздушного пространства. Помочь в этом могут специальные системы обнаружения беспилотных летательных аппаратов (антидрон-системы). Они имеют функционал обнаружения и нейтрализации дронов, что позволяет значительно уменьшить вероятность несанкционированного доступа и утечки информации.

Системы защиты от беспилотных летательных аппаратов включают в себя:

1. Радиолокационный радар.
2. Система радиочастотного отслеживания.
3. Модуль визуального распознавания.

«Лаборатория Касперского» в 2019 году создала решение Kaspersky Antidrone для защиты и мониторинга воздушного пространства от беспилотных летательных аппаратов. Данный программно-аппаратный комплекс может предотвратить последствия несанкционированного применения дронов. С помощью Kaspersky Antidrone нейронные сети могут позволить классификацию беспилотников и распознать даже несерийные модели размером от 8 сантиметров и на расстоянии до 25 километров в плохих погодных условиях.

Обнаружение аппаратов в воздушном пространстве происходит благодаря специальным сенсорам для аудио- и видеодетектирования с применением лазерного сканирования, радиочастотного и радиолокационного анализа. С точностью 97% в режиме реального времени выводится информация по модели дрона, определению дальности, высоты и скорости полета в графическом интерфейсе. В случае обнаружения опасности Kaspersky Antidrone блокирует связь беспилотного летательного аппарата с пультом управления и вынуждает его вернуться к точке отправления или совершить экстренную посадку.

Стоит отметить, что программно-аппаратный комплекс Kaspersky Antidrone внедрен на одном из крупных предприятий в Челябинской области (трубопрокатном заводе) для мониторинга и контроля воздушного пространства от гражданских беспилотных летательных аппаратов.

Стоит отметить, что на данный момент нет системы, которая на 100% защитила инфраструктуру предприятия. Дроны широко применятся в настоящее время во многих сферах и нередко используются для промышленного шпионажа и нанесения ущерба организации. Снизить риски несанкционированного применения беспилотных летательных аппаратов помогут специальные антидрон-системы, например, программно-апаратный комплекс Kaspersky Antidrone, разработанный «Лабораторией Касперского».

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ИССЛЕДОВАНИЕ ВЛИЯНИЯ ИЗМЕНЕНИЙ ВО ВНЕШНЕЙ СРЕДЕ ПРЕДПРИЯТИЯ НА КОРРЕКТИРОВКУ КОРПОРАТИВНОЙ СТРАТЕГИИ

Аннотация:*При непрерывном развитии рыночной экономики предприятия в любой момент сталкиваются с изменениями во внешней среде. Эти изменения окажут определенное влияние не только на производство и функционирование предприятия, но и на стратегическую корректировку предприятия. Оказывают определенное влияние.В этой статье будет проанализировано влияние изменений во внешней среде предприятия на стратегическую корректировку предприятия и исследовано, как предприятие может вносить эффективные стратегические коррективы в ответ на изменения во внешней среде.*

Ключевые слова: *Внешняя среда; корпоративная стратегия*

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INVESTIGATION OF THE IMPACT OF CHANGES IN THE EXTERNAL ENVIRONMENT OF THE ENTERPRISE ON THE ADJUSTMENT OF CORPORATE STRATEGY

Summary:*With the continuous development of a market economy, enterprises are faced with changes in the external environment at any moment. These changes will have a definite impact not only on the production and functioning of the enterprise, but also on the strategic adjustment of the enterprise. They have a certain impact.This article will analyze the impact of changes in the external environment of an enterprise on the strategic adjustment of an enterprise and explore how an enterprise can make effective strategic adjustments in response to changes in the external environment.*

Keywords*:External environment; corporate strategy*

1. Влияние изменений во внешней среде предприятия

Изменения в рыночной среде

Рыночная среда является одной из наиболее важных внешних сред для развития предприятия.С непрерывным развитием рыночной экономики рыночная среда также постоянно меняется, что влияет на производство и функционирование предприятий.Например, усиление рыночной конкуренции, расширение размеров рынка, изменение потребительского спроса и т.д., эти изменения окажут влияние на стратегическую перестройку предприятий[96].

Изменения в социальной среде

Социальная среда также является одной из важных внешних сред для развития предприятия. Изменения в социальной среде могут повлиять на представления потребителей о потреблении и потребительские потребности, тем самым влияя на стратегическую корректировку предприятия.Например, потребности людей в охране здоровья, окружающей среды, безопасности и т.д. постоянно растут, и изменения в этих потребностях окажут влияние на исследования и разработки продуктов компании, позиционирование на рынке и маркетинговые стратегии.

Изменения в политической среде

Изменения в политической среде также окажут влияние на стратегическую перестройку предприятий.Например, льготная политика правительства в отношении определенных отраслей и корректировка налоговой политики - все это окажет влияние на деятельность предприятий.

2. Как предприятия реагируют на изменения во внешней среде

Своевременная адаптация к изменениям рынка

Предприятия должны всегда обращать внимание на изменения рынка, глубоко понимать потребности рынка и своевременно корректировать структуру своей продукции и рыночное позиционирование, чтобы адаптироваться к изменениям рынка.В то же время предприятиям также необходимо использовать рыночные возможности и постоянно расширять рынок сбыта, чтобы добиться быстрого роста предприятий.

Сталкиваясь с изменениями во внешней среде, предприятия должны сохранять гибкость и адаптироваться к изменениям во внешней среде путем изменения своего стратегического направления, организационной структуры, методов производства и эксплуатации.

Когда предприятие сталкивается с изменениями во внешней среде, ему необходимо оптимизировать свое внутреннее управление и повысить уровень управления и эффективность управления, чтобы адаптироваться к вызовам, вызванным изменениями во внешней среде[97].

Сталкиваясь с изменениями во внешней среде, предприятия должны укреплять инновации и повышать свою основную конкурентоспособность за

[96] Сун С. Особенности китайской «культурной мягкой силы» / С. Сун // Этносоциум и межнациональная культура. – 2017. – № 3 (105). – С. 149-151.

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счет инноваций в производстве продукции, технологических инноваций и инноваций в управлении, чтобы отвечать вызовам рынка.

После изменения политической среды предприятиям необходимо быть в курсе содержания и воздействия политики, вносить коррективы и изменения, чтобы максимально соответствовать требованиям политики и потребностям производства и эксплуатации предприятия.

Исследование влияния изменений во внешней среде предприятия на стратегическую корректировку предприятия должно стать одной из важных тем управления предприятием.Предприятия должны быть в курсе изменений на рынке, в обществе, в политике и т.д. и своевременно корректировать свои корпоративные стратегии и методы управления, чтобы адаптироваться к изменениям во внешней среде и в конечном итоге добиться долгосрочного и устойчивого развития предприятия.

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ВЛИЯНИЕ ГЛОБАЛИЗАЦИИ ЭКОНОМИКИ НА КОРПОРАТИВНОЕ СТРАТЕГИЧЕСКОЕ УПРАВЛЕНИЕ

Аннотация: *В последние годы, в связи с быстрым развитием экономики Китая, предприятия нашей страны также вступили на путь стремительного развития, но в то же время выявилось множество проблем. Принимая во внимание экономическую глобализацию за основу, в данной статье раскрывается взаимосвязь между экономической глобализацией и корпоративным стратегическим управлением, а также анализ соответствующей литературы и систематическое сравнение на основе стратегической теории семи крупнейших иностранных предприятий и с учетом уровня развития китайского корпоративного стратегического управления, в данной статье рассматриваются следующие аспекты: возможности и вызовы экономической глобализации для стратегического управления китайскими предприятиями, и пытается выделить из пяти аспектов проблемы, на которые китайским предприятиям следует обратить внимание при построении корпоративной системы стратегического управления в условиях глобализации.*

Ключевые слова:*Экономическая глобализация; корпоративное стратегическое управление; возможности*

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THE IMPACT OF ECONOMIC GLOBALIZATION ON CORPORATE STRATEGIC MANAGEMENT

Summary*: In recent years, due to the rapid development of China's economy, our country's enterprises have also embarked on a path of rapid development, but at the same time, many problems have emerged. Taking economic globalization as a basis, this article reveals the relationship between economic globalization and corporate strategic management, as well as an analysis of relevant literature and a systematic comparison based on the strategic theory of the seven largest foreign enterprises and taking into account the level of development of Chinese corporate strategic management., This article examines the following aspects: opportunities and challenges of economic globalization for the strategic management of Chinese*

enterprises, and tries to identify from five aspects the problems that Chinese enterprises should pay attention to when building a corporate strategic management system in the context of globalization.

Keywords:*Economic globalization; corporate strategic management; opportunities*

В условиях все более жесткой рыночной конкуренции, постоянного изменения потребностей клиентов и стремительного развития науки и техники выживание и развитие предприятий сталкиваются со все более серьезными проблемами. Большое количество теоретических исследований и практических изысканий показали, что внедрение стратегического управления является для предприятий фундаментальным способом получения постоянного конкурентного преимущества в сложной и изменчивой бизнес-среде. Более того, с ускорением процесса экономической глобализации и интернационализации рынка китайские предприятия должны конкурировать на международном уровне с многонациональные компании по всему миру, что требует от китайских предприятий правильного формулирования своих конкурентных стратегий, основанных на внешней среде и ее изменяющихся тенденциях, в сочетании с их собственными внутренними ресурсными условиями, чтобы получить постоянное конкурентное преимущество, то есть стратегическое управление предприятиями стало центром внимания и ядром управления предприятием[98].

Однако в целом возможности стратегического управления наших предприятий, как правило, недостаточны. На большинстве предприятий в нашей стране нет специального отдела стратегических исследований и управления, а стратегическое мышление предприятий обычно существует только в головах корпоративных лидеров. Также не существует научной и обоснованной демонстрационной системы для формулирования стратегии. Нет ни организационной гарантии реализации стратегии, ни регулярной оценки реализации стратегии в процессе реализации стратегии. В конечном счете, стратегия не может сочетаться с производством и эксплуатацией оборудования. это почти просто фантазия, и она не дает необходимых указаний для развития предприятия, заставляя многих людей думать, что стратегическое управление совершенно непрактично и малополезно. После вступления нашей страны в ВТО все предприятия столкнутся с глобальными конкурентами, и конкуренция на рынке будет становиться все более острой. Если предприятие хочет быть непобедимым и продолжать развиваться и расти, ему необходимо укреплять свои собственные возможности и усиливать менеджмент. Эффективное стратегическое управление является одним из важных аспектов.

[98] Лю Цзюньшэн. Исследование выбора пути и стратегической ориентации интернационализации экономики Китая и глобализации предприятий [J]. Научная консультация: Наука и технологии·Менеджмент, 2013 (22): 20-21.

Глобализация[99] - это новое явление, которое становится все более заметным в мире с 1980-х годов, и оно является основной чертой современной эпохи.Единого определения глобализации не существует. Вообще говоря, с точки зрения материальной формы, глобализация относится к трансграничному потоку товаров и капитала, который прошел несколько стадий развития, таких как транснациональная, локальная интернационализация и глобализация. Трансграничный поток товаров и капитала - это начальная форма глобализации. В ходе этого процесса возникли соответствующие региональные и международные организации по управлению экономикой и хозяйствующие субъекты, а также трансграничные обмены, столкновения, конфликты и интеграция духовных сил, таких как культура, образ жизни, ценности и идеология. Вызовы глобализации корпоративному стратегическому управлению, рассматриваемые в данной статье, в основном относятся к экономической глобализации.

Экономическая глобализация постепенно развивалась вместе с прогрессом науки и техники. Разделенная в соответствии с влиянием научно-технической революции, определяющей процесс экономической глобализации или мирового экономического развития, экономическая глобализация прошла примерно четыре стадии: стадию интернационализации товаров, стадию интернационализации капитала, стадию интернационализации производства и стадию интернационализации финансов.

Глобализация торговли[100] - это высокоразвитая интернационализация торговли и основное содержание экономической глобализации. Финансовая глобализация является не только результатом глобализации торговли, но и основой глобализации производства, “кровью” функционирования всей мировой экономики и важным содержанием экономической глобализации. В настоящее время темпы глобализации производства также ускоряются. Внешним проявлением глобализации производства является глобализация прямых иностранных инвестиций.

Микросубъектами, стоящими за экономической глобализацией, являются транснациональные компании, которые становятся все более доминирующими в мировой экономике. Именно глобальная деловая активность транснациональных компаний, включая производство, торговлю, финансы и даже культурные обмены, международное спонсорство и т.д., делают экономическую глобализацию величайшим источником власти. Многонациональная деятельность предприятий все чаще становится неизбежным выбором в ответ на сложившуюся ситуацию. Помимо

[99] Ли Сяохун. Исследование системы стратегического управления государственными предприятиями, основанное на перспективах экономической глобализации [J]. Журнал Хэнаньского педагогического университета: Издание по философии и социальным наукам, 2010, 37(3):109-111.

[100] Ли Сяохун. Исследование системы стратегического управления государственными предприятиями, основанное на перспективах экономической глобализации [J]. Журнал Хэнаньского педагогического университета: Издание по философии и социальным наукам, 2010, 37(3):109-111.

транснациональных компаний, к факторам, которые играют важную роль в содействии развитию экономической глобализации, относятся: научно-техническая революция, управленческие инновации, рыночная экономика, либерализация торговли и инвестиций.

Корпоративная стратегия относится к будущему развитию предприятия, основанному на внутренней и внешней среде и ресурсных условиях, на основе обобщения исторического опыта и анализа текущей ситуации, а также на долгосрочной перспективе, формулировании глобального, перспективного, динамичного и направляющего плана и компоновки, подходящих для компании. само предприятие. Стратегическое управление предприятием относится к процессу, посредством которого старшие менеджеры предприятия путем анализа и прогнозирования внутренней и внешней среды, в которой находится предприятие, формулируют стратегию, подходящую для развития предприятия, и внедряют ее, контролируя процесс внедрения и предоставляя обратную связь о результатах внедрения.

Таким образом, стратегическое управление государственными предприятиями имеет следующие характеристики: (1) Научное стратегическое управление должно основываться на научном анализе, соответствовать характеристикам самого предприятия, отвечать социальным потребностям и соответствовать национальным условиям нашей страны.(2) Долгосрочный характер. При разработке корпоративной стратегии необходимо строить высокий дом и смотреть на проблему с долгосрочной точки зрения. Однажды сформулированный, он не может изменяться ни днем, ни ночью, но обеспечивает стабильность, согласованность и непротиворечивость на более длительный период времени.(3) Динамика. В процессе реализации корпоративных стратегий они должны быть адаптивно скорректированы с учетом изменений объективных факторов и изменений в окружающей среде.(4) Ориентированная на будущее корпоративная стратегия должна позволять предсказывать будущее.(5) Глобальный характер: разработка корпоративных стратегий должна исходить из общей ситуации на предприятии, принимая во внимание различные объективные условия, с которыми сталкивается предприятие, и должна охватывать все аспекты деятельности предприятия.(6) Руководящий принцип корпоративного стратегического управления заключается в том, чтобы направлять развитие предприятий с учетом общей ситуации и на макроуровне.

С развитием социальной экономики, культуры, науки и техники и т.д., а также с накоплением практического опыта в области управления предприятием теория корпоративной стратегии сформировала различные корпоративные стратегические идеи и стратегические теоретические взгляды. В двух словах, существуют в основном следующие точки зрения[101] :

[101] Ли Сяохун. Исследование системы стратегического управления государственными предприятиями, основанное на перспективах экономической глобализации [J]. Журнал Хэнаньского педагогического университета: Издание по философии и социальным наукам, 2010, 37(3):109-111.

(1) С классической точки зрения, Ай Ансов и другие считают, что разработка стратегии - это рациональный процесс, который был тщательно рассчитан и проанализирован, а целью разработки стратегии является максимизация долгосрочного конкурентного преимущества.

(2) С эволюционной точки зрения, Ханнан и др. считают, что динамичный, враждебный и конкурентный характер рынка означает, что не только долгосрочное выживание предприятий не может быть спланировано заранее, но и в определенной степени гарантирует получение прибыли только теми компаниями, которые придерживаются стратегия максимизации может выжить.

(3) С точки зрения процесса, Минцберг и другие считают, что процесс формирования стратегии подобен процессу изготовления керамики ремесленниками. Это процесс исследования, экспериментов, обучения и корректировки; формирование стратегии обычно происходит за счет надлежащего предварительного обдумывания, изучения во время выполнения каких-либо действий и последующего подведения итогов улучшения.

(4) С системной точки зрения Грано и др. считают, что цели и практика реализации стратегии зависят от особой социальной системы, в которой осуществляется деятельность по разработке стратегии.(5) Школа промышленной организации считает, что внешняя среда оказывает решающее влияние на стратегические действия предприятий.(6) Школа ресурсов и возможностей, Прахарад и др. считают, что корпоративная стратегия заключается главным образом в том, чтобы развивать уникальные стратегические ресурсы предприятия и максимально использовать возможности по распределению таких стратегических ресурсов.(7) Стратегия Голубого океана, Цянь Цзинь и другие считают, что инновация ценности - это стратегическая логика быстрорастущих предприятий. Они делят стратегии, используемые в настоящее время компаниями, на стратегии Красного моря и стратегии голубого океана. Красное море представляет все отрасли, которые существуют сегодня, то есть уже известное нам рыночное пространство; Голубой океан представляет отрасли, которых сегодня еще не существует, то есть неизвестное рыночное пространство.

Возможности и вызовы, связанные с экономической глобализацией для стратегического управления предприятиями

Анализ текущей ситуации со стратегическим управлением предприятиями в нашей стране

После почти 30 лет развития деловые и теоретические круги нашей страны добились значительных успехов в стратегическом менеджменте, а некоторые компании добились успеха благодаря стратегическому менеджменту. Однако в целом из-за влияния традиционного стратегического мышления в нашей стране, инерции плановой экономической системы и непродолжительного знакомства с западной теорией стратегического

менеджмента понимание стратегии не очень глубокое. В настоящее время уровень стратегического управления нашими предприятиями невысок, и все еще существует много проблем в реальной эксплуатации. Основными проявлениями являются[102]: (1) Недостаточная стратегическая осведомленность предприятия; (2) Неосуществимость корпоративной стратегии; (3) Отсутствие соответствующих мер по корректировке корпоративной организационной структуры и планов инноваций в области человеческих ресурсов при реализации корпоративной стратегии; (4) Отсутствие вариативность в реализации корпоративной стратегии.

Возможности и вызовы, которые экономическая глобализация создает для корпоративного стратегического управления

Стремительный прогресс процесса экономической глобализации поставил предприятия нашей страны в совершенно новые условия для выживания и развития. В ходе этого процесса предприятия нашей страны столкнутся с большим количеством возможностей и вызовов.

(1) Глобализация распределения ресурсов. В условиях глобализации ресурсы распределяются по всему миру, что является как возможностью, так и вызовом для наших компаний. С одной стороны, предприятия должны повысить уровень своего управления, чтобы сохранить существующие ресурсы. С другой стороны, предприятия также должны создать условия для участия в распределении международных ресурсов и привлечения более качественных ресурсов.

(2) Глобализация рынка и многоуровневый потребительский спрос. В условиях экономической глобализации государственные предприятия сталкиваются с двумя рынками - внутренним и внешним, а потребительский спрос диверсифицирован, сложен и подвержен изменениям. По мере того как иностранные инвестиции продолжают поступать, а отечественные компании постепенно уходят, компании сталкиваются с потребителями из многих стран с различными культурными традициями, жизненными обычаями, законами и нормативными актами, а также политической обстановкой. В настоящее время при осуществлении своей деятельности предприятия должны уделять внимание различению различных групп потребителей и целенаправленно разрабатывать различные стратегии развития.

(3) Интернационализация и усиление рыночной конкуренции. В условиях глобализации компании сталкиваются не только с более крупными и сложными рынками, но и со все большим количеством конкурентов, причем все более сильных. Для того чтобы занять определенное положение на международном рынке, необходимо постоянно изучать рыночные правила и успешный опыт конкурентов. При разработке стратегий необходимо перенимать передовые методы и распорядительные приемы других стран и

[102] Янь Липин. Экспериментальная дискуссия о влиянии и вызовах экономической глобализации [J]. Форум Ассоциации науки и техники, 2008 (11): 101-102.

вносить адаптируемые коррективы для постоянного улучшения своей деятельности. собственная конкурентоспособность и инновации.

(4) Глобализация знаний и информации. С развитием информационных технологий средства и скорость распространения знаний были разработаны и усовершенствованы беспрецедентно, и люди могут получать разнообразную информацию с помощью различных средств. Информация на рынке быстро меняется и поступает нескончаемым потоком. Предприятия должны идти в ногу со временем в своих методах стратегического управления и вооружаться самыми передовыми информационными технологиями. В то же время они также должны создать единую модель, способствующую передаче информации в своей модели управления, чтобы бизнес-менеджеры могли в первую очередь понимать тенденции рынка и состояние предприятия. время, своевременно формулируйте планы реагирования и быстро решайте проблемы.

Вопросов, на которые следует обратить внимание при построении системы стратегического управления предприятием в условиях глобализации

Важность корпоративной среды для стратегии развития предприятия заключается в том факте, что предприятие всегда выживает и развивается в определенной среде. В то же время среда выживания и развития предприятия также постоянно развивается и меняется, и любые изменения в среде выживания и развития предприятия являются существенными. предпринимательство может приносить предприятию как возможности и выгоды, так и проблемы и риски.

В процессе разработки и реализации стратегий развития важной задачей менеджеров является глубокий анализ факторов, которые окружающая среда может предоставить предприятию, возможностей или угроз. Среди них анализ внутренней среды предприятия заключается главным образом в выявлении преимуществ и скрытых опасностей функционирования предприятия; анализ внешней среды предприятия заключается главным образом в выявлении возможностей и угроз функционирования предприятия. Объединение этих четырех факторов для анализа обычно называется SWOT-анализом.

Так называемая общая стратегия относится к долгосрочной и глобальной стратегии, которая составляет генеральный план для достижения общих целей развития и направления будущего развития предприятия; специальная стратегия - это локальная стратегия, которая составляет конкретные планы для определенного аспекта развития предприятия с целью реализации общей стратегии. о компании "Энтерпрайз". Взаимосвязь между общей стратегией и специальной стратегией - это взаимосвязь между общей и локальной стратегиями. Общая стратегия - это глобальная руководящая программа для общей координации каждой специальной стратегии. Следовательно, общая стратегия должна основываться на специальной стратегии, и каждая специальная стратегия должна соответствовать требованиям общей стратегии, чтобы обеспечить реализацию общей стратегии. Отказавшись от общей стратегии, специальная стратегия потеряет

направление, а отказавшись от специальной стратегии, общая стратегия потеряет свою основу.

В условиях экономической глобализации, если у предприятия нет стратегии, это равносильно плаванию по морю без рулевого, и добиться успеха невозможно; а если взаимосвязь между общей стратегией и специальной стратегией не налажена должным образом, это равносильно отсутствию командира- главнокомандующий на войне, и это тоже провал.

Стратегические цели в основном включают в себя два аспекта: один - направление развития предприятия; другой - уровень развития предприятия. Цели этих двух аспектов должны быть определены с помощью ряда экономических и технологических показателей. Эти экономические и технологические показатели должны быть научно спрогнозированы и определены в соответствии с условиями эксплуатации и фактическим положением предприятия. В условиях глобализации экономики бизнес-среда предприятия в любой момент может претерпеть серьезные изменения. Направление развития и стратегические цели предприятия должны иметь определенные возможности для корректировки, и эта корректировка не принесет предприятию значительных потерь и рисков.

Кроме того, стратегические меры предприятия должны быть классифицированы как необходимые, и для тех основных стратегических мер, которые играют решающую роль в достижении стратегических целей предприятия, должно быть введено специальное управление, и они должны быть эффективно гарантированы с точки зрения финансовых средств, талантов и технологий, а также для тех общих мер, которые играют решающую роль в достижении стратегических целей предприятия. необходимо осуществлять стратегические меры, централизованное управление, чтобы быть в курсе хода реализации различных мер и обеспечивать взаимную координацию и сотрудничество между ними.

Что касается взаимосвязи между разработкой и реализацией стратегии развития предприятия, то разработка стратегии должна быть направлена на реализацию, чтобы достичь целей развития предприятия и реализовать видение предприятия; а для обеспечения эффективной реализации стратегии развития предприятия необходимо, чтобы предприятие разработало стратегии в соответствии с фактическим развитием предприятия, а также разработка и реализация эффективных стратегических мер.

Поскольку предприятие является ячейкой экономики и общества, экономика предприятия является микроэкономической и основой макроэкономики. Поэтому, когда предприятие формулирует и реализует стратегию развития, оно должно учитывать ее взаимосвязь со стратегией экономического и социального развития. Что касается взаимосвязи между стратегией развития предприятия и стратегией экономического и социального развития, то она заключается главным образом в том, что стратегия развития предприятия должна основываться на стратегии экономического и социального развития. Позиционирование и корректировка отрасли и

продукции предприятия должны соответствовать национальной промышленной политике; масштабы развития, отраслевая структура и структура продукции предприятия должны способствовать трансформации методов экономического развития; технический прогресс и технологические инновации предприятия должны соответствовать тенденциям и направлению социального развития. технологическое развитие; путь развития предприятия должен соответствовать требованиям перехода на путь новой индустриализации, который способствует энергосбережению, сокращению выбросов и охране окружающей среды.

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ИННОВАЦИОН ТЕХНОЛОГИЯЛАРНИНГ ЖАМИЯТ ТАРАҚҚИЁТИГА ФУНКЦИОНАЛ ТАЪСИРИНИНГ ИЖТИМОИЙ-ФАЛСАФИЙ ЖИҲАТЛАРИ

Аннотация: *ушбу мақолада инновацион технологияларининг Ўзбекистон сиёсий ижтимоий-иқтисодий эркинлаштиришдаги ўрни ва роли баён этилган.*

Калит сўзлар: *технология, инновацион технология ижтимоий-иқтисодий ҳаёт, эркинлаштириш.*

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SOCIAL AND PHILOSOPHICAL ASPECTS OF THE FUNCTIONAL INFLUENCE OF INNOVATIVE TECHNOLOGIES ON THE DEVELOPMENT OF SOCIETY

Abstract: *the article describes the role and place of innovative technologies in the political, socio-economic liberalization of Uzbekistan.*

Key words: *technologies, innovative technologies, socio-economic life, liberalization.*

Жаҳонда инновацион технологияларнинг жамият ижтимоий-иқтисодий ҳаётидаги роли ва уларнинг демократик тамойилларни янада кенг ва чуқур амал қилишга функционал таъсири нуқтаи назаридан илмий, ижтимоий-фалсафий жиҳатдан баҳо беришнинг объектив эҳтиёжи ортиб бормоқда. Шу билан бирга рақамли технологияларнинг ривожланиши шароитида инновацион технологияларнинг жамият тараққиётига функционал таъсири, ижтимоий ва ахлоқий қадриятлар билан муносабати каби муаммоларни ижтимоий-фалсафий жиҳатдан таҳлил қилиш долзарблик касб этмоқда. Шунингдек, жаҳонда инновацион технологияларнинг жамият маънавияти ва инсон капиталининг юксалтиришга функционал таъсирини аниқлашга қаратилган бир қанча илмий лойиҳалар амалга оширилмоқда. Жамият ижтимоий тизимларини юксалтириб бориш жараёнида илғор инновацион

технологиялар - воситаларни муҳим унсур сифатида ижтимоий-фалсафий таҳлил қилиш заруратини тақозо этмоқда.

Ўзбекистоннинг янги тараққиёт стратегиясида истиқболли инновацион технологияларни шакллантириш йўллари ва амалга ошириш механизмларини аниқлашга қаратилган бир қанча илмий лойиҳалар ва давлат дастурлари амалга оширилмоқда. Айниқса, «Рақамли идора» лойиҳаси доирасида давлат органларида иш юритувини рақамлаштириш орқали маъмурий тартиб-таомилларни оптималлаштириш ва бошқарув жараёнини автоматлаштириш”га қаратилган инновацион технологик ечимларда эҳтиёж - инновацион технологияларнинг жамият тараққиётига функционал таъсирини фалсафий тадқиқ этиш вазифаларини юзага чиқармоқда. Шу сабабли, ривожланаётган Ўзбекистон шароитида инновацион технологияларни ўзбек жамиятининг ижтимоий тизимларида шахснинг ижтимоийлашуви ва янгича ижтимоий муносабатларни шакллантириш воситаси сифатида қўллаш имкониятларини ўрганиш ҳамда уларни ижтимоий-фалсафий жиҳатдан таҳлил қилиш муҳим ва долзарб аҳамият касб этмоқда. Бу, ўз навбатида, инновацион технологияларнинг жамият ривожланишидаги ўрнини чуқурроқ тушунишга ва улардан самарали фойдаланиш йўлларини белгилашга имкон яратади.

Жаҳон тажрибаси шуни кўрсатмоқдаки, жамиятлар ўзининг ижтимоий-иқтисодий ривожланишида инновацион технологиялар тараққиётга эришиш учун энг устувор вазифа сифатида кўрилган. Чунки, барча ислоҳотлар тараққиётга қаратилган. Ижтимоий муносабатларда инновацион технологиялар тараққиёт олиб борилаётган ислоҳотлар, халқ манфаати учун қабул қилинган қонунларнинг тўғри ишлашига сабаб бўлади. Асрлар давомида тўпланган тажрибага кўра, инновацион технологияларни ривожлантирмасдан туриб ва қатъий қонунлар ишлайдиган ва халқ манфаатлари қадрланадиган жамиятни, иқтисодий-ижтимоий фаровонликни таъминлаш, фуқаролик жамиятини қуриш имконсиздир.

Инновацион технологияларнинг ўзига хослиги шундаки, улар жамият ҳаётини ривожлантиришга, унда содир бўлаётган жараён ва ҳодисаларга шахсларнинг ижодий ҳаракатларини татбиқ этиш натижасидир. Инновацион технологиялар асосий мураккаблик, юқори фаоллик ва динамик, шунинг учун оқилона тамойилнинг (ақл, фан, мақсадни белгилаш) иррационал (ҳис-туйғулар) диалектик муносабати билан тавсифланади.

Бугунги глобаллашув даври иқтисодий ва маънавий жараёнлар сингари ижтимоий соҳага ҳам ўз таъсирини ўтказмоқда. Умуминсоний қадрият ҳисобланган шахс ва унинг қадр-қиммати ижтимоий-маданий инқирозлар сабаб жамиятда ўз ўрнини сақлаб қолишга интилмоқда. Шахс қиёфасига таъсир қилаётган бундай жараёнлар инновацион бошқарувни ва ижтимоий маданий технологияларни ривожланиши билан янада фаоллашмоқда. Шунинг учун ҳам жамиятни илмий бошқаришнинг инновацион усулларини ишлаб чиқиш жорий этиш ва уларни ижтимоий муаммоларни ҳал этиш борасидаги илмий тадқиқларни тақозо этади. Мамлакатимиз тараққиётини янада юксак

босқичга кўтариш мақсадида Ҳаракатлар стратегияси қабул қилинди. Бу ноёб ҳужжатда белгиланган улуғвор вазифаларни рўёбга чиқаришга қатъий киришганимиз биз учун янги уфқ ва имкониятлар очиб бермоқда. Дунё миқиёсида рақобат кескинлашиб бораётган ҳозирги мураккаб даврда мамлакатимизни илм-фан ютуқлари, юқори технологиялар асосида модернизация қилиш ва янгилаш энг муҳим вазифага айланди.

Ўзбекистонда истиқболли инновацион технологиялар шахс ва ижтимоий тизимлар ўртасидаги ўзаро муносабатлар икки томонлама мураккаб жараёни бўлган функционал жиҳатларининг ижтимоийлашувни илгари суриш лозим. Инновацион технологиялар ижтимоийлашув ижтимоий тизимларнинг шахсга мақсадли функционал таъсирини ўз ичига олади ва жамиятда мавжуд бўлган ижтимоий нормалар, ориентациялар, қадриятлар ва хулқ-атвор моделлари (яъни миллий маданият)ни бир авлоддан иккинчи авлодга, бир ижтимоий гуруҳ ва жамоадан бошқасига ўтказиш жараёнини ифодалайди.

Ўзбекистонда инновацион технологиялар билан боғлиқ қуйидаги тенденцияларни кузатишимиз мумкинлигини кўрсатиб ўтади: ижтимоий-маданий ва коммуникатив жараёнларда инсон омили таъсирининг ўсиши ва миллий маданият ва ижтимоий алоқалар, уларнинг самарадорлиги учун инновацион технологияларнинг мураккаблиги ва ижтимоий алоқанинг бирлашган шакли бир вақтнинг ўзида турли хил таъсир ўтказиш воситаларини жалб қилиш орқали хабарлар ва мурожаатлар, оммавий ижтимоий мулоқотнинг анонимлигига салбий муносабатларнинг кучайиши, ижтимоий алоқада урф-одатлар, маросимлар, анъаналар ва бошқалар каби универсал маданий воситалардан кенг фойдаланиш.

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РАЗРАБОТКА ЭФФЕКТИВНЫХ МЕТОДОВ КУПИРОВАНИЯ ОПИОИДНЫХ ОТРАВЛЕНИЙ. АНТИДОТЫ И ИХ МОДИФИКАЦИИ (ОБЗОР ЛИТЕРАТУРЫ)

Аннотация: *Уникальные физико-химические и фармакологические свойства синтетических наркотиков обусловливают заболеваемость и смертность,*
связанные с их употреблением. Среди последствий, возникающих в результате злоупотребления сильнодействующими опиоидами или в случае масштабного поражения при их использовании в качестве химического оружия, появляется необходимость увеличения дозы и кратности использования конкурентного антагониста налоксона, единственного доступного в настоящее время средства для купирования передозировки. Нами будут рассмотрены имеющиеся в общемировой практике средства для купирования опиоидных отравлений, обсуждена необходимость внедрения более мощных опиоидных антагонистов быстрого и длительного действия и представлены возможные направления функционализации опиоидных лигандов морфинанового типа.

Ключевые слова: *антагонисты опиоидных рецепторов, налоксон, налтрексон, налмефен, метоциннамокс, тевинолы, орвинолы, фторированные производные*

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DEVELOPMENT OF EFFECTIVE METHODS FOR THE MANAGEMENT OF OPIOID POISONING. ANTIDOTES AND THEIR MODIFICATIONS (LITERATURE REVIEW)

Abstract*:The unique physicochemical and pharmacological properties of synthetic drugs are responsible for both the morbidity and mortality associated with their overdose. Among the consequences resulting from misuse of these potent opioids, or in the case of mass casualties involving the large-scale use of weaponised synthetic opioids, is the need for higher and repeated doses of the*

competitive antagonist naloxone, currently the only drug available to reverse opioid overdose. We reviewed the reversal agents available worldwide, discuss the need for stronger, faster and longer-acting opioid antagonists to reverse opioid overdose, and look at possible areas of functionalization of morphinan-based opioid ligands.

Keywords: *opioid antagonists, naloxone, naltrexone, nalmefene, methocinnamox, thevinols, orvinols, fluorinated derivatives*

Введение. Одной из актуальных общемировых задач медицины является разработка эффективных методов купирования опиоидных отравлений в связи с увеличением химического разнообразия злоупотребляемых опиоидов и случаями использования синтетических опиоидов в качестве боевых химических веществ [12]. Появление синтетических опиоидов, обладающих уникальными свойствами, подорвало общепринятые представления о лечении опиоидной передозировки. Высокая липофильность данных соединений ускоряет проникновение молекул в центральную нервную систему (ЦНС), что приводит к очень быстрому наступлению угнетения дыхания и уменьшению возможности спасения людей после передозировки [1,2]. Экспериментальные исследования временных изменений опиоидной депрессии дыхания демонстрируют ее более быстрое наступление при введении синтетических препаратов, чем при использовании опиатов. Так, было показано, что фентанил снижает концентрацию кислорода в головном мозге в два раза быстрее, чем оксикодон и морфин, при этом максимальное снижение при введении фентанила в зависимости от дозы было уже через 62–80 сек, оксикодона – примерно в 2–3 раза более долгий промежуток времени, а морфина – через 20 мин. После внутривенного введения эквивалентных доз фентанила, героина и морфина минутная вентиляция легких снижалась до 50% от исходного уровня, при этом скорость наступления эффекта у фентанила была примерно в 3 раза выше, чем у героина и в 9 раз – чем у морфина [18]. Все использованные в данной работе опиоиды снижали частоту дыхания, однако только фентанил вызывал немедленное и значительное уменьшение дыхательного объема, что определяло его способность быстро снижать минутную вентиляцию.

«Окно возможностей» для успешного спасения конкретных индивидуумов может существенно различаться, поскольку каждая передозировка является результатом уникального набора обстоятельств. Передозировка героином может не привести к летальному исходу в течение как минимум 20–30 мин [11], тогда как при передозировке синтетических опиоидов проявление симптомов угнетения дыхания наступает в течение нескольких секунд или минут [5]. Это подтверждает данные о том, что фентанил может вызывать угрожающую жизни дыхательную недостаточность в течение 2 мин после его внутривенного введения, поскольку угнетение дыхания достигает максимума через 5 мин [14]. К тому же фентанил имеет длительный период элиминации, характеризующейся

феноменом вторичного пика, который может проявляться как «фентаниловый рикошет» [3]. В целом точная оценка длительности латентного периода наступления угрожающего жизни угнетения дыхания затруднена множеством факторов: типом принятого опиоида(ов) и его количеством, совместным употреблением других веществ или предшествующим употреблением опиоидов [6]. Серьезно осложняет лечение передозировки большинства запрещенных синтетических опиоидов и отсутствие представлений об их фармакокинетических профилях.

В основе токсичности опиоидов лежит их способность активировать опиоидные рецепторы, в первую очередь – μ-опиоидные рецепторы, на противодействие которым и направлена разработка потенциальных антидотов опиоидных отравлений. Целью настоящего обзора является рассмотрение средств, применяемых для купирования опиоидных отравлений в общемировой практике, и представление возможного направления модификации опиоидных лигандов морфинанового типа.

1. Используемые и разрабатываемые антидоты опиоидных отравлений. Модификация и функционализация 4,5α-эпоксиморфинанового каркаса опийных алкалоидов морфина (1), кодеина (2) и тебаина (3) (рис. 1) привели к созданию и разработке многочисленных полусинтетических опиоидов, которые проявились как новые типы лигандов опиоидных рецепторов с различной селективностью к их подтипам, демонстрируя различные фармакологические профили, варьирующие от чистых агонистов до чистых антагонистов.

Одним из первых веществ, признанных антагонистами опиоидов, противодействующих болеутоляющему и угнетающему дыхание действию морфина, был налорфин, N-аллилзамещенный аналог морфина, который при самостоятельном применении также вызывал угнетение дыхания [16].

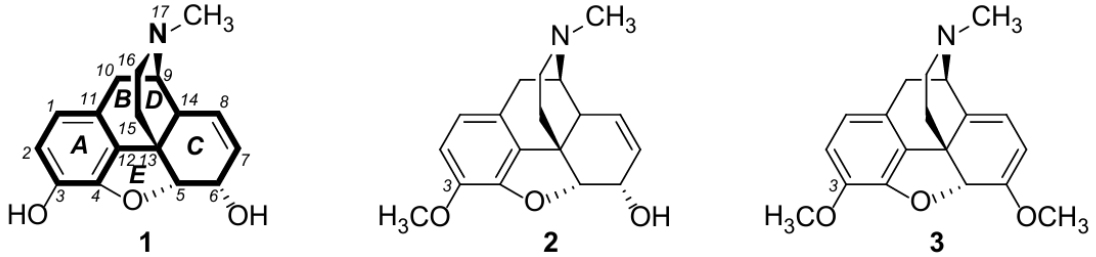


Рис. 1. Основные 4,5α-эпоксиморфинановые алкалоиды *Papaver somniferum L.*, 1753: морфин (1), кодеин (2) и тебаин (3). В молекулярной структуре 1 жирным шрифтом выделена структура морфинана, а также представлена нумерация атомов и колец

Fig. 1. The principal 4,5α-epoxymorphinan alkaloids of *Papaver somniferum L.*, 1753: morphine (1), codeine (2) and thebaine (3). The morphinan framework is highlighted in bold in the molecular structure of 1 and provided with conventional numbering of atoms and rings

Позже природные морфинановые алкалоиды преобразовывали в различные фармакологически более выгодные соединения, такие как 14-гидроксиморфинаны, включая так называемые «нал»-соединения (например, налоксон, налтрексон, налмефен), и 6,14-этено и 6,14-этаноморфинаны, производные с мостиком в кольце С или «соединения Бентли» (например,

эторфин, бупренорфин, дипренорфин), названные так в честь K. W. Bentley, общепризнанного классика химии морфинанов [2].

1.1. Налоксон – прототип антидотной терапии при отравлении опиоидами. Изучение производных 14-гидроксиморфинана заслуживает особого внимания, поскольку оно привело к концепции существования «чистых» антагонистов, то есть антагонистов, полностью лишенных агонистической активности. Налоксон (17-аллил-17-нороксиморфон; таблица), высокоаффинный антагонист опиоидных рецепторов, включенный в список жизненно необходимых лекарственных средств (essential medicine) Всемирной организацией здравоохранения, является «золотым стандартом» лечения передозировки опиоидов уже на протяжении более 50 лет. В марте 1961 г. J. Fishman и M. J. Lewenstein подали заявку на один из первых патентов на налоксон (US Pat., 3493657A, 1970). В 1971 г. Управление по санитарному надзору за качеством пищевых продуктов и медикаментов (FDA) одобрило использование налоксона (инъекционная форма для внутривенного введения Evzio®) для купирования передозировок опиоидов. Налоксон противодействует эффектам опиоидов путем конкурентного связывания с μ-, κ- и δ-опиоидными рецепторами ЦНС, проявляя наибольшее сродство к μ-опиоидному рецептору. По некоторым данным, налоксон является обратным агонистом опиоидных рецепторов [15]. При внутривенном введении действие налоксона начинается уже в течение первых 2 мин. Обычной дозы налоксона (0,1–0,15 мг/кг внутривенно) достаточно для полной блокады центральных μ-опиоидных рецепторов (> 90% оккупация рецепторов; время экспериментальной сессии~60 мин), предположительно из-за первоначального перенасыщения рецепторов. Налоксон в данном диапазоне доз также блокирует κ-опиоидные рецепторы (78–100%) и, в некоторой степени, δ-опиоидные рецепторы (48–74%). В более низких дозах (0,01 мг/кг внутривенно) налоксон блокирует δ- и κ-опиоидные рецепторы в меньшей степени, но при этом обеспечивает высокий уровень блокады μ-опиоидных рецепторов в течение ~30 мин [16].

Налоксон показан для лечения опиоидной токсичности, в частности для устранения угнетения дыхания. Однако фармакокинетические и фармакодинамические свойства налоксона не позволяют эффективно противостоять многочисленным человеческим потерям, обусловленным масштабным внедрением синтетических опиоидов. Налоксон в дозах, способных купировать передозировку рецептурных опиоидов или героина, может оказаться неэффективным в случае злоупотребления или случайного воздействия сильнодействующих синтетических опиоидов [18]. Период полувыведения налоксона крайне непродолжителен – 30–90 мин, длительность действия – 1–2 часа [1], что оставляет нерешенной проблему последующей ренаркотизации и, как следствие, передозировки, приводящей к смерти. Ренаркотизация происходит у 20–45% жертв передозировки, которых первоначально спасали с помощью внутривенно вводимого налоксона – вероятность ее возникновения может быть снижена при

использовании спасательного средства с более длительным периодом полураспада [10]. Поиск такого средства особенно важен в эпоху синтетических наркотиков.

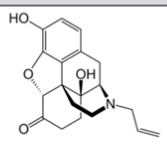
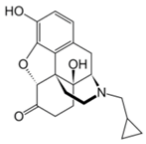
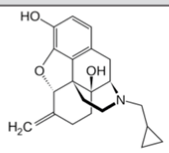
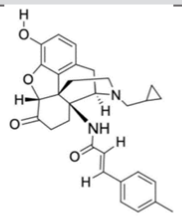
1.2. Налтрексон – прототип налмефена. Производное нороксиморфона налтрексон, являющееся N-циклопропилметильным аналогом налоксона, было запатентовано в 1967 г. (кодовое название – EN-1639A; H. Blumberg, I. J. Pachter, Z. Matossian US Pat., 3332950A, 1967; табл. 1). Налтрексон обладает высокой степенью сродства к μ-опиоидным рецепторам и, по сравнению с налоксоном, более высокой антагонистической активностью и большей продолжительностью действия (период полувыведения – 3,9–10,3 часов; > 90% оккупация рецепторов до 8–49 ч) [7], однако для начала развития его эффекта требуется 15–30 мин [12]. При введении налтрексона в качестве антидота синтетического опиоида карфентанила, так же, как и в случае налоксона, были зарегистрированы случаи ренаркотизации, что подчеркивает преодолимость антагонизма налоксона и налтрексона [18]. Молекула налтрексона послужила прототипом для создания антагониста опиоидных рецепторов налмефена.

1.3. Налмефен – высокоаффинный опиоидный антагонист длительного действия 6-Метиленовый (= CH2) аналог налтрексона налмефен (таблица) был запатентован в 1974 г. (J. Fishman US Pat., 3814768A, 1974 г.). Имеющий длительный период элиминации, налмефен может применяться при лечении острых отравлений синтетическими опиоидами в больших дозах, а также при отравлении опиоидами с медленным метаболизмом. Парентеральная форма налмефена Revex ® была одобрена FDA в 1995 г. для лечения опиоидной передозировки, но отозвана с рынка в 2008 г. по коммерческим причинам (высокая стоимость), при этом безопасность и эффективность налмефена не вызывали опасений. В 2021 г. в США вновь была подана заявка на регистрацию инъекционного лекарственного средства – налмефена гидрохлорида, которой FDA дало статус приоритетного рассмотрения, учитывая острую необходимость в мощных опиоидных антагонистах. В 2023 г. FDA одобрило рецептурный назальный спрей налмефена гидрохлорида Opvee ®, который может использоваться для лечения взрослых и детей старше 12 лет с известной или предполагаемой передозировкой опиоидов. Одобрение налмефена основано на результатах исследований компании Opiant Pharmaceuticals Inc., недавно ставшей частью компании Indivior PLC.

При внутривенном введении налмефена для начала отмены действия опиоида необходимо ~2 мин. Если налмефен (1 мг) вводили внутримышечно или подкожно, то для начала развития эффекта могло потребоваться 5–15 мин. В клинической модели вызванного опиоидами угнетения дыхания у испытуемых, не страдающих опиоидной зависимостью, действие интраназально введенного налмефена начиналось через 2,5–5 мин и полностью устраняло респираторную депрессию уже через 5 мин после приема. Период полувыведения налмефена одинаковый при внутримышечном и интраназальном введении, составляет 10,6–11,4 часов [8,

10]. Хотя продолжительность действия налмефена (не менее 8 часов) [49] соизмерима с таковой у большинства опиоидов, считают, что рецидив угнетения дыхания все еще остается возможным.

Используемые и потенциальные антидоты опиоидных отравлений
The used and potential antidotes for opioid overdose

Вещество		Налоксон [22, 36, 46]	Налтрексон [22, 36, 46]	Налмефен [8, 10, 49]	Метоциннамокс [21, 22, 26]
Химическая формула					
Путь введения		в/в; в/м; п/к; и/н; в/к; ингаляция	в/в; в/м; п/к; per os	в/в; в/м; п/к; и/н	в/в; п/к
Сродство к опиоидным рецепторам	μ	Обратимый конкурентный антагонист	Обратимый конкурентный антагонист	Обратимый конкурентный антагонист	Псевдонеобратимый неконкурентный антагонист
	κ			Частичный агонист	Обратимый конкурентный антагонист
	δ			Обратимый конкурентный антагонист	
Развитие эффекта, мин		1–5	15–30	2–15	15–45
Длительность действия, ч		1–2	> 72	не менее 8	до 3–14 дней

1.4.Метоциннамокс

Среди веществ с отсроченным антагонистическим действием по отношению к μ-опиоидным рецепторам выделяется серия 14β-аминозамещенных производных кодеинона и морфинона, породившая целый ряд лигандов с различными характеристиками эффективности, в первую очередь 14-циннамоиламино-замещенные [19]. Наибольший интерес для данного обзора представляет производное 14-амино-аналога оксиморфона метоциннамокс (14β-(4'-метилциннамоиламино)-7,8-дигидро-17-нор-17 цикло пропилметил) морфинон, MCAM; табл. 1), который был впервые синтезирован в рамках программы по созданию бупренорфиноподобных молекул [20,6]. В отличие от налоксона и налмефена, он функционально необратимо связывается с опиоидными рецепторами, в связи с чем его действие длительно и не преодолевается большими дозами агонистов опиоидных рецепторов. В дополнение к псевдообратимому ортостерическому антагонизму μ-опиоидных рецепторов, напрямую блокирующему связывание, метоциннамокс также использует аллостерический антагонизм на неизвестном участке с более низкой аффинностью, что изменяет сродство к лиганду и/или внутреннюю активность агонистов μ-опиоидных рецепторов [12]. Эти фармакологические свойства метоциннамокса делают его потенциально эффективным средством для лечения передозировки опиоидами благодаря длительности защиты. Действие метоциннамокса продолжалось до 3 дней и не менее 2 недель после внутривенного и подкожного введения, соответственно, достигая пиковой концентрации через 15–45 мин после введения [20]. Метациннамокс не имеет заметных лекарственных взаимодействий, что предоставляет возможность

одновременного применения с налоксоном для немедленного предотвращения угнетения дыхания и последующей ренаркотизации. Клинические исследования с целью оценки эффективности и безопасности метациннамокса были запланированы и, возможно, уже проводятся в настоящее время (URL: https://heal.nih.gov/funding/awarded?comb ine = methocinnamox).

1.5. Орвинолы: фторирование как перспективное направление модификации Гипотеза о том, что более жесткие структуры на основе 4,5α-эпоксиморфинана могут улучшить соотношение желательных и нежелательных побочных эффектов опиоидов, привела к получению многочисленных 6,14-эндо-этиленовых аддуктов Дильса-Альдера на основе тебаина и их производных. Среди этих аддуктов (рис. 2) первостепенное значение имеет тевинон (4), аддукт тебаина с метилвинилкетоном. C(20)-спирты на основе тевинона (тевинолы, 5) и их 3-O-деметилированные аналоги (орвинолы, 6), а также соответствующие 6,14-эндо-этанопроизводные (Z~Z = CH2 CH2) дали начало как мощным опиоидным агонистам, так и антагонистам, которые до сих пор используются в медицине и ветеринарии. Среди веществ, обладающих антагонистических действием по отношению к μ-опиоидным рецепторам, наиболее известен дипренорфин, который разрешен к применению в ветеринарии для снятия обездвиживания животных под действием эторфина (в зависимости от измеряемых параметров в 1000–80000 раз более сильного агониста, чем морфин) или карфентанила [4]. Потенциальной причиной, истинность которой неизвестна, большей эффективности дипренорфина по сравнению с налоксоном в борьбе с индуцированной фентанилом дыхательной недостаточностью может быть его большая антагонистическая активность [14], высокая липофильность и/или альтернативный режим связывания с μ-опиоидными рецепторами по сравнению с налоксоном [18].

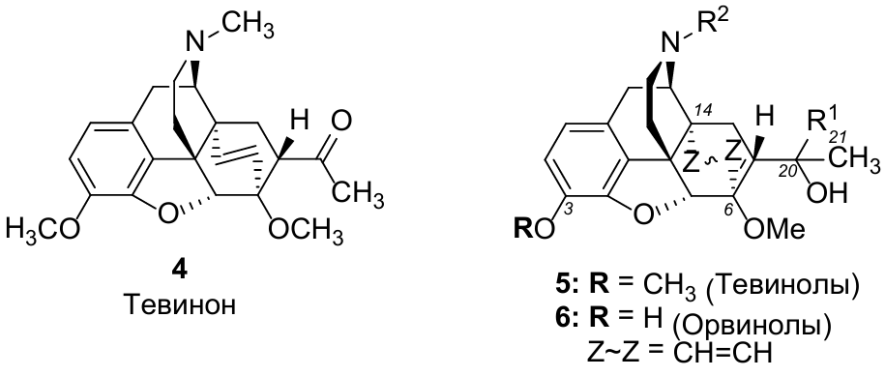


Рис. 2. Тевинон (4) и его производные: тевинолы (5) и орвинолы (6) («соединения Бентли»)

Fig. 2. Thevinone (4) and its derivatives: thevinols (5) and orvinols (6) («Bentley compounds»)

На сегодняшний день «соединения Бентли» (5, 6; рис. 2) остаются объектами для химической модификации и изучения их фармакологических

эффектов [2]. Тевинольное/орвинольное направление разрабатывает группа S. M. Husbands (University of Bath, Великобритания), продолжающая традиционное направление старейшей научной школы K. W. Bentley и активно изучающая лиганды, структурно родственные бупренорфину, в частности, обладающие антагонистическими свойствами по отношению к опиоидным рецепторам [9,19]. В целом возможности модификации малых молекул для получения рядов соединений весьма ограничены, поскольку они быстро ведут либо к внесению слишком больших изменений в строение базового каркаса молекулы, либо к затрагиванию в ней фармакофорных фрагментов. В обоих случаях свойства получаемых производных начинают резко отличаться от свойств базовой молекулы и не позволяют плавно влиять на взаимосвязь «структура-активность». Нахождение синтетической возможности влиять на параметры лиганд-рецепторного взаимодействия среди опиоидных лигандов морфинанового типа путем создания относительно небольших «возмущений» базового морфинанового остова молекул позволило бы конструировать опиоидные лиганды, близкие по строению к уже известным лигандам с определенными фармакологическими свойствами, включая применяемые в медицине лекарственные средства, и более тонко воздействовать на фармакологические характеристики последних. Замещение атомов водорода на фтор в органических молекулах, конечно, не является изотопным замещением, приводящим к незначительным изменениям в их свойствах. Однако относительно небольшие различия в размерах атомов водорода и фтора, высокая электроотрицательность фтора и его способность вследствие этого влиять на свойства соседних фрагментов молекулы (прежде всего, на кислотность групп COOH, OH и на основность аминогрупп), способность, в отличие от CH-фрагментов, участвовать в образовании водородных связей, изменять липофильность/гидрофильность соответствующих фрагментов молекулы открывают возможность управления параметрами связывания фторсодержащих опиоидных лигандов с рецепторами, сохраняя при этом в значительной степени геометрические параметры нефторированных аналогов. Так, замена части атомов водорода на фтор приводит к: – повышению устойчивости биологически активных молекул к метаболическим процессам в организме человека (за счет большей устойчивости связей C-F по сравнению со связями C-H и вследствие отсутствия в живых организмах ферментативных систем, ориентированных на осуществление превращений фторированных фрагментов молекул по причине крайне редкой встречаемости) и, соответственно, к удлинению продолжительности действия фторированных соединений [13]; – существенному влиянию на фармакологический профиль исходных физиологически активных соединений [10] – до 25–30% лекарственных субстанций, разрабатываемых фармацевтической промышленностью, содержат в своем составе атомы фтора [14]. Функционализированные фторсодержащие соединения (например, арилфториды) часто используются в качестве фармацевтических агентов, обладающих благоприятными

фармакологическими свойствами, такими как желательная метаболическая стабильность. Производное морфина, в котором 6-гидроксильный заместитель заменен на атом фтора, было синтезировано группой T. Ritter (Harvard University, США). Изучение последствий введения атомов фтора и фторсодержащих групп в молекулы морфинанового ряда в последние годы ведется в группе R. A. Altman (University of Kansas, США) [18], которая разрабатывает новые методы синтеза потенциальных биологически активных веществ [11]. В частности, ими были получены полифторированные 3-(фтороалкокси)- и 3-(фтороалкильные) производные декстрометорфана со значительно улучшенными фармакокинетическими свойствами in vivo по сравнению с родительским соединением и его дейтерированным аналогом, тем самым подчеркивая преимущества данной стратегии как одного из путей для полусинтетической функционализации других терапевтических кандидатов [10].

2. Антидотная терапия при передозировках опиоидов: настоящее и будущее Распространенность синтетических наркотиков в незаконном обороте приводит к тому, что каждая передозировка при отсутствии надлежащего вмешательства становится потенциально смертельной [16]. Внутривенное введение налоксона является высокоэффективным средством для купирования опиоидной передозировки [12], но в условиях преобладания синтетических опиоидов начало лечения с внутримышечного введения налоксона в низкой дозе или использования интраназальной формы данного препарата (например, 3–4 мг) с расчетом на то, что будет возможность «увеличить дозу», может неправомерно задержать противодействие угнетению дыхания и привести либо к стойкому повреждению мозга [11], либо к смерти. Однако введение высоких доз налоксона или более мощного быстродействующего антидота налмефена может стать причиной преципитированной абстиненции, что встречает сопротивление людей, особенно тех, кто испытал ее симптомы во время предыдущего спасения [17, 20]. Тем не менее, по данным опроса 1150 пациентов, проходивших лечение от опиоидной зависимости в 2021 г., 35,9% респондентов все же предпочли бы более высокую дозировку налоксона, если бы лично столкнулись с передозировкой. Более половины из них сообщили, что для снятия последствий предыдущей передозировки им потребовалось две или более дозы Narcan® (т. е. 8 мг или более назального спрея налоксона) [13]. Соотношение риска и пользы от применения больших доз налоксона или налмефена, а также потребность в препаратах с более выраженным антагонистическим действием будут оставаться предметом споров и дискуссий, несмотря на уверенность в том, что недодозировка налоксона более опасна, чем опиоидный абстинентный синдром, симптомы которого неприятны и мучительны, но поддаются лечению и редко угрожают жизни [5, 15]. Появление в арсенале средств антидотной терапии новых веществ, высокоаффинных антагонистов с быстрым развитием эффекта, повысит шансы на успешное спасение за счет своевременного возобновления

нормального дыхания, снижая вероятность последствий продолжительного гипоксического повреждения.

В настоящее время в Узбекистане единственным антидотом острых отравлений опиоидными наркотическими веществами является налоксон. Производство основано на импортной субстанции, прекращение поставки которой, делает его уязвимым. Учитывая высокую вероятность продолжения злоупотребления фентанилом и его аналогами, появление структурно отличного класса запрещенных синтетических веществ – бензимидазолов, обладающих сходными с фентанилом характеристиками, опасения по поводу использования в качестве химического оружия синтетических веществ со сверхвысоким сродством к опиоидным рецепторам, разработка более эффективных, продолжительно действующих антидотов с ускоренным началом действия является одним из аспектов стратегии, направленной на устранение недостатков существующих мер по борьбе с опиоидной токсичностью и снижение последствий злоупотребления опиоидами.

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МЕТОДЫ КОРРЕКЦИИ ОШИБОК ПРИ ФАЗОВОМ РЕГУЛИРОВАНИИ

Аннотация: *Предложена модификация метода целочисленной интерферометрии, применяемого для устранения искажений профиля интерференционных полос, вызванных погрешностями при регистрации и обработке интерферограмм.*

Ключевые слова: *элемент, обьект, фаза, коэффициент, интерферометрии, связ, диапазон, комплекс, постоянной, потери, коррекции.*

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METHODS OF ERROR CORRECTION IN PHASE CONTROL

Annotation: *A modification of the integer interferometry method is proposed, which is used to eliminate distortions of the interference fringe profile caused by errors in recording and processing interferograms.*

Keywords: *element, object, phase, coefficient, interferometry, communication, range, complex, constant, loss, correction.*

В вдения: В статье представлена информация о многих алгоритмах, реализующих подход фазовой неопределенности, который основан на оценке локальных разрывов фазы и суммировании поправочных коэффициентов, пропорциональных числу разрывов в области интегрирования пространственного пути интегрирования, с учетом отсутствия разрывов или их знака.

Проблемы.

1. Ошибки, возникающие при фазовом контроле

Развитие современных технологий невозможно без совершенствования высокоточных измерительных систем. Основным элементом лазерных интерференционных систем является интерферометр, осуществляющий сравнение объектного и опорного волновых полей. Поле

яркости I(x,y), возникающее при интерференции опорного и объектного оптических полей описывается выражением

$$I(x,y) = A(x,y) + B(x,y)\cos\left(\Phi(x,y)\right)$$

где A(x,y)-средняя яркость; B(x,y)-амплитуда интерференционных полос; Ф(x,y)-поле фазовых разностей интерферирующих оптических полей (полная фаза):

$$\Phi(x,y) = \phi(x,y) + 2\pi N(x,y)$$

Здесь N(x,y)-число целых периодов 2π, укладывающихся в полную оптическую разность фаз Ф(x,y) и зависящих от геометрии схемы интерферометра и длины волны излучения лазера λ;ф(x,y)-локальная фаза, являющаяся дробной частью фазы Ф(x,y). Далее для упрощения изложения координаты (x,y) опускаем.

Определение целого числа периодов N называется устранением фазовой неоднозначности. Существует большое количество алгоритмов, реализующих данный подход. Как правило. Эти алгоритмы основаны на оценке разрывов локальных фаз и выборе пути пространственного интегрирования таким образом, чтобы область интегрирования не содержала разрывы, либо суммировании поправочных коэффициентов, пропорциональных количеству разрывов, с учетом их знака. Очевидно, что в случае ошибки определения местоположения скачков происходит накопление ошибок и в связи с этим ограничение возможного диапазона измерений. Кроме того, данные методы не позволяют обнаружить скачок фазы, превышающий 2π, что является принципиальным ограничением одночастотных интерференционных систем. В работе предложен способ целочисленной интерферометрии, позволяющий реконструировать полную фазу Ф непосредственно по значениям локальных фаз Ф, используя несколько длин волн лазера. Такой подход способствует устранению отмеченных недостатков, но весьма чувствителен к ошибкам измерения локальных фаз ф.

Вместо разности фаз интерферирующих волн Ф удобно ввести в рассмотрение пропорциональную ей величину ʌ - оптическую разность хода (OPD - Optical Path Difference) (далее - разность хода). Полная разность хода ʌ связана с полной фазой Ф:

$$\Lambda = \frac{\lambda}{2\pi}\Phi = \frac{\lambda}{2\pi}(\phi + 2\pi N) = \delta + \lambda N$$

где δ - локальная разность хода, соответствующая локальной фазе ф (эта величина изменяется от нуля до цены интерференционной полосы в длинах волн).

Измеренные значения локальных фаз ф переводятся в локальные разности хода δ, которые выражаются в виде целых значений с числом знаков, обеспечивающих необходимую точность измерения.

Для определения OPD требуется найти решение целочисленной системы сравнений

$$\begin{cases} \Lambda \equiv \delta_1 \bmod m_1, \\ \Lambda \equiv \delta_2 \bmod m_2. \end{cases}$$

Решение этой системы можно представить в виде траектории на комплексной плоскости (δ_1, δ_2). Максимальная длина траектории $L_{max} = m_1 \times m_2 - 1$ задает динамический диапазон однозначного определения λ_{max}. Расстояние между соседними диагоналями траектории $\delta L = 1$. Если $\lambda < \lambda_{max}$, то $\delta L > 1$. Например, если $m_1 = 633$, $m_2 = 488$ (что соответствует линиям генерации He-Ne- и Ar-лазеров) и $L_{max} = 10/m_2$, то $\delta L = 52$.

При неточном определении исходных значений $\delta^*_{1,2} = \delta_{1,2} + \varepsilon_{1,2}\delta_{1,2}$ решение системы сравнений приводит к грубым ошибкам, так как разность хода λ^* соответствующая δ_1^* и δ_2^* на комплексной плоскости будет больше λ_{max}. Если точка на комплексной плоскости, соответствующая δ_1^* и δ_2^* , отклоняется от ближайшей диагонали траектории на величину не более $\delta L/2$, данную ошибку можно компенсировать.

Наибольший вклад в искомую погрешность дает отклонение профиля интерференционных полос от вида выражения. Чаще всего отклонение этой зависимости от к синусоидальной формы вызывается спекло образной структурой изображения при когерентном освещении.

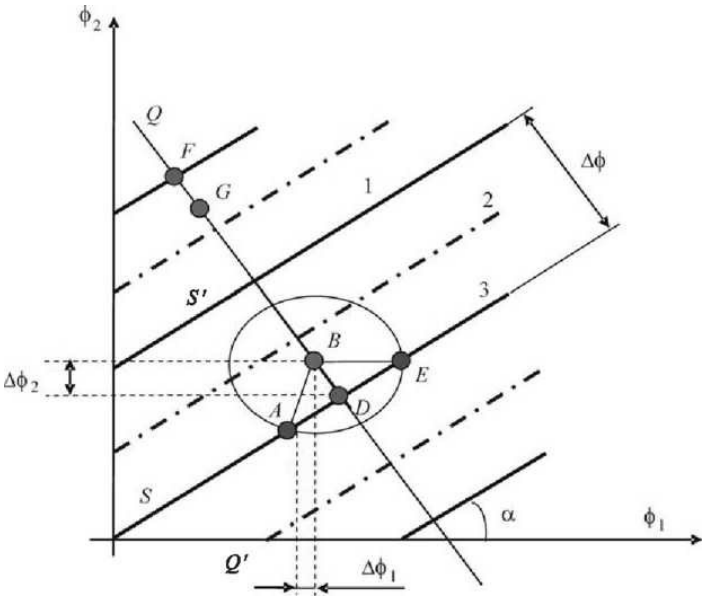

Рис. 1. Траектория интерференционного сигнала на комплексной плоскости

Целью предлагаемой работы является модификация базового метода для повышения его устойчивости к ошибкам измерений, связанным с использованием профиля интерференционных полос.

2.Модификация базового метода. Для устранения ошибок при искажении профиля полос необходимо поэтапно:

1. Вычислить разность локальных разностей хода: $\Delta = \delta_1 - \delta_2$.
2. Найти изотропные области, т. е. области интерферограммы, в которых выполняется условие

Δ=const

Следует отметить, что погрешности определения границ изотропных областей, возникающие в отдельных точках и обусловленные малым соотношением сигнал/шум разностей хода, носят локальный характер и не распространяются на соседние области.

3.Вычислить оценку разности в изотропных областях. В отсутствие шумов разность А является кусочно-постоянной функцией независимо от закона изменения OPD. Без потери устойчивости на этапе коррекции допустимо отклонение оценки разности на величину, не превышающую половины расстояния между диагоналями 1 и 3 линии сигналов 2 (рис. 1).

4.Сформировать фазовые плоскости (Δ_1, δ_2), (Γ_1, δ_2) и (δ_1, Γ_2) по следующему правилу:

$$\Gamma_1 = \delta_2 + \Delta_j; \qquad \Gamma_2 = \begin{cases} \delta_1 + \Delta_j, & \text{если } \delta_1 - \Delta_j \geq 0, \\ \delta_1 - \Delta_j + m_2 & \text{иначе.} \end{cases}$$

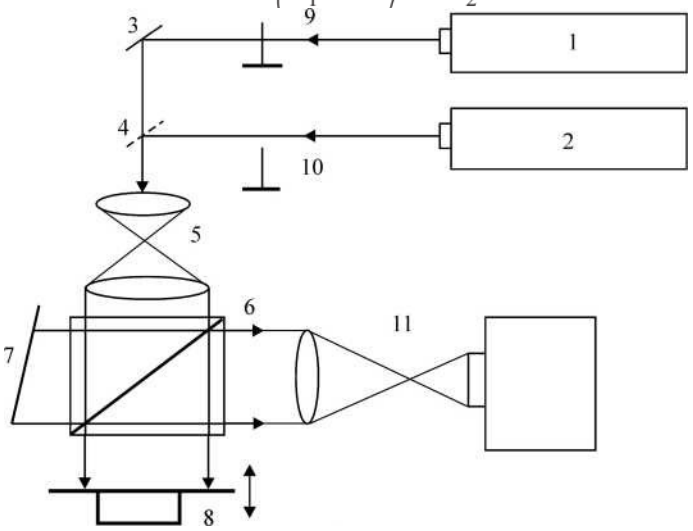

Рис. 2. Оптическая схема интерферометра: 1,2- лазеры; 3,7- зеркала; 4 – полупрозрачное зеркало; 5 - коллиматор; 6 - светоделительный кубик; 8 - подвижное опорное зеркало; ,10-прерыватели луча; 11 - устройство ввода

5.Скорректировать разности хода на фазовой плоскости и определить полную разность хода (OPD) по основному алгоритму.

Экспериментальная проверка производилась путем измерения рельефа эталонного объекта основным и предлагаемым способами. Оптическая схема лазерной интерферометрической системы приведена на рис. 2.

На первом этапе регистрировалось несколько интерферограмм с различными фазовыми сдвигами. Величина фазового сдвига, вносимого между экспозициями интерферограмм, равна $\lambda/10$. Регистрация интерферограмм выполнялась следующим образом: сначала поочередно регистрировались интерферограммы с разными длинами волн, затем изменялось положение опорного зеркала.

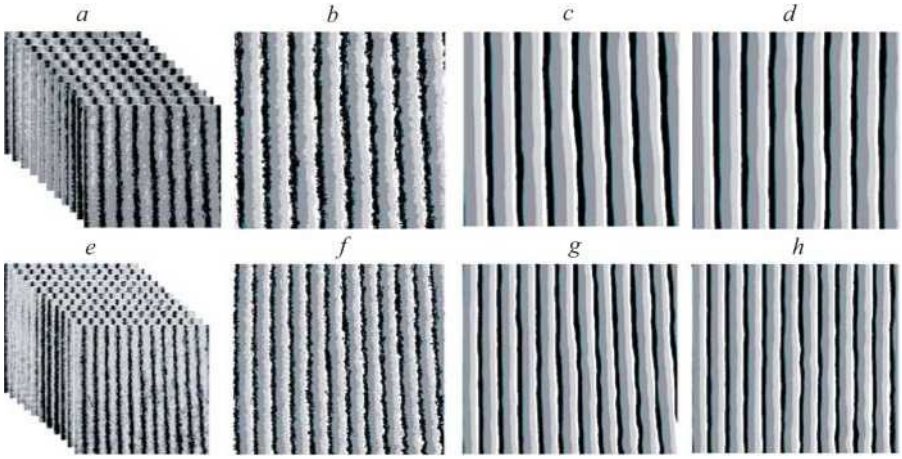

Рис. 3. Результаты первого этапа алгоритма коррекции: интерферограммы (*a*, *e*), локальные фазы (*b*, /), локальные фазы после фильтрации для длин волн 633 нм (*c*, *g)* и 488 нм *(d, h)*

Всего было зарегистрировано 22 интерферограммы: 11- с длиной волны 633 нм и 11 — с длиной волны 488 нм (рис. 3, *a, e).* На рис. 3, ***b,f*** показаны результаты вычисления локальных фаз. Для снижения дестабилизирующих факторов выполнялась фильтрация спекл-шумов (рис. 3, ***c,g)*** и устранение волновых аберраций оптической схемы интерферометра (рис. 3, d_f A) соответственно.

На втором этапе вычислялись локальные фазы и $ф_2$ согласно методике, изложенной в. Фазовые профили интерферограмм $ф_1$ и $ф_2$ для длин волн 633 и 488 нм показаны на рис. 4, *a*, *b* соответственно и разность фаз между ними на рис. 4, *c.* На основе вычисленной разности фаз Дф определялись изофазные области (Δф = const) и синтезированные фазы ($ф_1$,$φ_2$) и ($φ_1$, $ф_2$) и вычисление соотсивующих им полных фаз Ф, $Ф_1$, и $Ф_2$ по модифицированному методу (рис. 5, *a-f*).

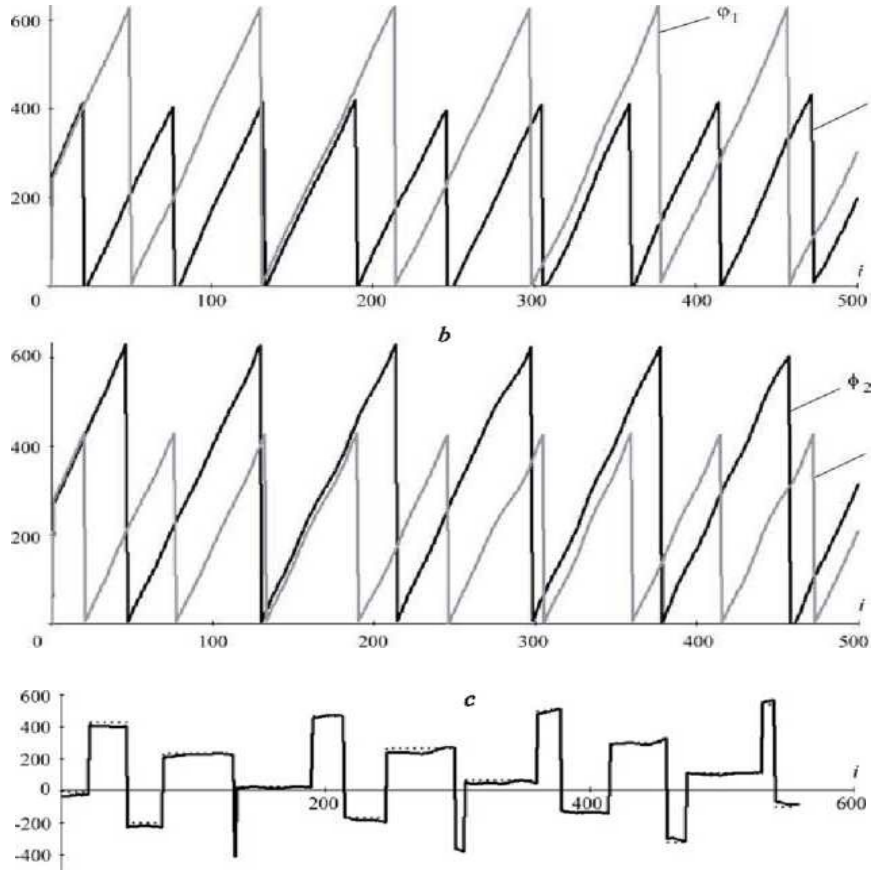

Рис. 4. Фазовые профили второго этапа: профили фаз ϕ_1, ϕ_2 и соответствующие им синтезированные фазы φ_1, φ_2 (a,b), разность фаз $\Delta\phi$(c)

Результаты коррекции траектории полной фазы до ближайшей разрешенной диагонали линии сигналов (по правилам (4)-(6)) для базового и модифицированного методов показаны на рис. 5, *b, d, f*. Из рис. 5, *b* видно, что результирующая погрешность полной фазы после устранения фазовой неоднозначности для базового метода много больше длины волны λ из-за наличия грубых ошибок, вызванных искажением профиля интерференционных полос при коррекции фазы. Погрешность измерения полной фазы после устранения фазовой неоднозначности по модифицированному методу не превышает погрешности измерения локальных фаз, что следует из рис. 5, *d, f*.

Абсолютная погрешность измерения полной фазы, полученной усреднением фаз Φ_1 и Φ_2, не превышает 2-5 нм.

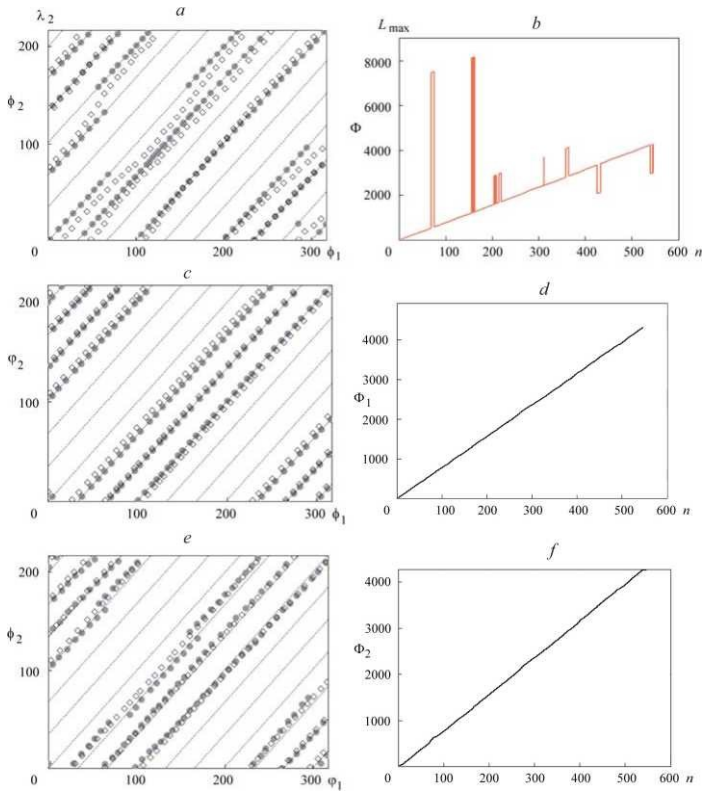

Рис. 5. Результаты вычислений третьего этапа: фазовые плоскости ($ф_1$, $ф_2$) *(a),* ($ф_1$, $φ_2$) (c),($φ_1$, $ф_2$)(e); полная фазаФ (b), $Ф_1$ *(d),* $Ф_2$ (f)

Среднеквадратическая погрешность измерения полной для модифицированного метода не превышает 1-2 нм, что соответствует погрешности расшифровки мене λ/300.

Заключение. Исправление ошибок, возникающих при управлении фазами, требует системного подхода, технологий, обучения и активного участия сотрудников. Эти методы позволяют повысить эффективность управления и постоянно совершенствовать процессы.

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ОЦЕНКА РЕЗУЛЬТАТОВ ПРИМЕНЕНИЯ АНТИРЕФЛЮКСНОЙ ЭНДОТРАХЕАЛЬНОЙ ТРУБКИ В ПРАКТИКЕ ИНТЕНСИВНОЙ ТЕРАПИИ

Цель исследования: *оценить эффективность применения антирефлексивной эндотрахеальной трубки при продленной искусственной вентиляции легких (ИВЛ) в отделении интенсивной терапии. Дизайн исследования. У 38-ми пациентов интенсивной терапии, находящихся на продленной ИВЛ, по данным объёма минутной вентиляции легких и динамики уровня парциального напряжения углекислого газа крови (PaCO2), а также оценки неврологического статуса (либо уровня седации), гемодинамики, температуры тела изучена эффективность применения антирефлексивной эндотрахеальной трубки.*

Результаты исследования. *Проведение ИВЛ с помощью антирефлексивной эндотрахеальной трубки обеспечивает уменьшение раздражения в зоне контакта слизистой оболочки трахеи и надувной манжетки в результате возможности орошения слизистой оболочки раствором лидокаина. Использование антирефлексивной эндотрахеальной трубки обеспечивает респираторный комфорт пациенту и достоверно реже сопровождается гипервентиляцией.*

Ключевые слова: *антирефлексивная эндотрахеальная трубка, интубация трахеи, продленная искусственная вентиляция легких, слизистая трахеи.*

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EVALUATION OF THE OUTCOMES OF USING AN ANTI-REFLUX ENDOTRACHEAL TUBE IN INTENSIVE CARE PRACTICE

The aim of the study *was to evaluate the effectiveness of the use of an antireflexive endotracheal tube during prolonged artificial lung ventilation (ALV) in the intensive care unit. Study design. In 38 intensive care patients on prolonged mechanical ventilation, according to the volume of minute ventilation of the lungs and the dynamics of the level of partial tension of blood carbon dioxide (PaCO2), as well as assessing the neurological status (or the level of sedation), hemodynamics, body temperature, the effectiveness of the use of antireflexive endotracheal tube.*

Research results. *Conducting mechanical ventilation using an antireflexive endotracheal tube reduces irritation in the contact zone of the tracheal mucosa and the inflatable cuff as a result of the possibility of irrigating the mucosa with a solution of lidocaine. The use of an antireflexive endotracheal tube provides respiratory comfort to the patient and is significantly less often accompanied by hyperventilation.*

Key words: *antireflexive endotracheal tube, tracheal intubation, prolonged mechanical ventilation, tracheal mucosa.*

Введение. Интубация трахеи — одна из наиболее частых манипуляций, выполняемых во время анестезии и в интенсивной терапии. Основной целью интубации трахеи вляется восстановление и поддержание проходимости верхних дыхательных путей. Первое описание введения человеку трубки в трахею для проведения вентиляции легких с помощью кожаных мехов принадлежит Парацельсу (1493–1541). Н. И. Пирогов (1847) с целью подержания проходимости верхних дыхательных путей в эксперименте вводил трубку в просвет трахеи. В 1858 году этот эксперимент повторил Дж. Сноу. Интубационная трубка для наркоза впервые была применена 5 июля 1878 году шотландским хирургом У. Макьюеном. Поскольку местная анестезия тогда не применялась, введение интубационной трубки вызвало у пациента приступ сильного кашля. Однако после ингаляции паров хлороформа кашель прекратился, и операция прошла успешно. В 1919 году Айван Мейджил модифицировал интубационную трубку, сделав её из отрезка красного резинового шланга изогнутой и со скошенным срезом. Эта трубка, в дальнейшем получившая имя автора, применялась более 40 лет, пока не появились трубки, изготовленные из биологически инертных пластмасс. С именем Артура Гведела связано дальнейшее усовершенствование интубационных трубок использование раздуваемой манжетки. Гведел начал разработку интубационных трубок с манжетами для повышения безопасности эндотрахеального наркоза. Первые манжетки, которые приклеивались на трубки, изготовлялись из каучука, презервативов,хирургических перчаток. После ряда экспериментов на животных Гведел пришел к выводу, что раздуваемая манжетка должна находиться ниже голосовых связок. Для более

наглядной демонстрации достоинств трубки с манжетами А. Гведел, используя собственную любимую собаку, после анестезии и интубации трахеи погрузил животное в аквариум с водой. Дыхание собаки осуществлялось через интубационную трубку. После окончания эксперимента собаку вытащили из аквариума и экстубировали. Чувствовало себя животное достаточно хорошо. После этой публичной демонстрации интубационные трубки с манжетами получили широкое распространение [1].

Несмотря на длительность применения интубации трахеи, как основного метода обеспечения проходимости дыхательных путей в клинической практике, надежной альтернативы ей так и не найдено. Интубация трахеи является сложной и ответственной манипуляцией, а трудности и опасности, которые её сопровождают, весьма разнообразны. В их число входят побочные эффекты, связанные с развитием рефлекторных патофизиологических реакций, вызванных раздражением слизистой гортани и трахеи интубационной трубкой [14]. Эти патофизиологические реакции могут иметь различную степень выраженности, а последствия их могут быть как незначительными, так и очень грозными, в зависимости от степени компенсаторных возможностей организма пациента [2, 12, 13]. Существует множество способов профилактики и устранения рефлекторных реакций. Среди них наиболее распространена медикаментозная профилактика (премедикация), различные методы местной анестезии слизистой оболочки гортани и трахеи, как наиболее эффективные и патогенетически обоснованные. К методам местной анестезии относятся применение ингаляторов и различных спреев, содержащих местный анестетик, посредством распыления per os; использование гидрофильных мазей, содержащих местные анестетики для смазывания манжетки эндотрахеальной трубки; местная анестезия после прокола перстне-щитовидной мембраны по методу «Bonica». У всех перечисленных методов имеется один общий недостаток — они не могут достаточно хорошо устранить рефлекторную импульсацию на протяжении длительного времени. Их эффективность ограничена сроком действия местного анестетика и, следовательно, ни один из них не может быть применен после интубации трахеи. Вместе с тем все эти методы имеют и собственные недостатки. Так, применение аэрозолей per os не обеспечивает доставку необходимого количества местного анестетика в подсвязочное пространство. Обработка манжетки интубационной трубки мазями с местным анестетиком практически не даёт эффекта из-за замедления всасывания через слизистую оболочку трахеи. К тому же невозможно точно контролировать общую дозу введенного препарата. Метод «Bonica» инвазивен и может сопровождаться ранением пищевода и кровеносных сосудов, инфицированием в месте пункции и подлежащих тканях шеи [3]. Одним из эффективных методов решения данной проблемы явилось совершенствование моделей интубационных трубок. В 2001–2002 годах были разработаны и запатентованы В. А. Перваком модели, использование которых позволяет вводить местные анестетики и другие

препараты непосредственно в зону контакта пневматической манжетки и слизистой оболочки трахеи после её интубации. Предложенная эндотрахеальная трубка нового типа относится к антирефлексивной (изобретение № 2150300 от 10 июня 2000 года) [8]. И получила широкое практическое распространение, но не была лишена недостатков в результате чего автором была предложена новая конструкция герметизирующей манжетки для эндотрахеальной трубки (изобретение № 2219965 от 27 декабря 2003 года) [6]. Имеются диссертации и исследования, позволяющие дать клиническую оценку эффективности использования новой конструкции герметизирующей манжетки во время общей анестезии при проведении различных оперативных вмешательств [4, 5]. По данной теме опубликовано более 10-ти работ, в том числе и 2 международные публикации о заявках на изобретение [7, 9]. Однако в доступной литературе отсутствуют сведения об эффективности применения антирефлексивных эндотрахеальных трубок у пациентов, которым проводится продленная респираторная поддержка в условиях отделения реанимации и интенсивной терапии. Проведение искусственной вентиляции лёгких (ИВЛ) через эндотрахеальную трубку в отделении интенсивной терапии нередко осложняется рефлекторными реакциями на эндотрахеальную трубку. Наиболее часто рефлекторные реакции проявляются гипервентиляцией, артериальной гипертензией, тахикардией, двигательным возбуждением [10, 11]. Это определяет необходимость глубокой седации пациентов, даже с расстройствами сознания.

Применение антирефлексивной эндотрахеальной трубки, возможно, позволит контролировать эти реакции, не прибегая к дополнительной седации, обеспечит респираторный комфорт интубированных пациентов. Проверка этой гипотезы и была целью исследования.

Цель исследования: оценить эффективность применения антирефлексивной эндотрахеальной трубки при продленной ИВЛ в отделении интенсивной терапии.

Материалы и методы исследования. Дизайн исследования — двойное слепое проспективное, клиническое, рандомизированное. Обследовано 38 пациентов мужского пола, проходивших лечение в отделении анестезиологии и реанимации Городской клинической больницы № 2 г. Владивостока. Параметры исследовались в течение первых суток проведения ИВЛ. Критерии включения в исследование — пациенты с черепно-мозговой травмой: ушибом головного мозга легкой и средней степени, острым нарушением мозгового кровообращения (ОНМК); пациенты с сочетанной травмой, а также пациенты после длительных оперативных вмешательств различного рода, которым была показана продленная ИВЛ. Критерии исключения: уровень сознания пациентов менее 12-ти баллов по шкале ком Глазго, либо R 2–4 по шкале Ramsay, сахарный диабет, отсутствие хронических обструктивных заболеваний легких в анамнезе, гипертермия, как возможная причина одышки и, как следствие, нарастание минутной

вентиляции легких, физический статус класса ASA IV. Больные были случайным образом разделены на две группы, имеющие различия по типу применяемой эндотрахеальной трубки. Схема анестезиологического пособия и режимы ИВЛ по группам были идентичными. 20 человек составила опытная группа, в которой применялось орошение слизистой трахеи 1 мл 2 % раствора лидокаина каждые 60 мин. (Данная дозировка рекомендована В. А. Перваком — изобретателем антирефлексивной эндотрахеальной трубки. В научных работах имеются данные, что при использовании лидокаина в такой дозировке токсическая концентрация местного анестетика в плазме не достигается). 18 человек составила контрольная группа, в которой орошение слизистой трахеи растворами местных анестетиков не производилось. Общая характеристика групп представлена в таблице 1.

Общая характеристика групп (M ± m)

Показатели	Контрольная группа (n = 18)	Опытная группа (n = 20)
Возраст (лет), пол	66,5 ± 4,3	67,6 ± 5,1
Масса тела (кг)	74,2 ± 4,1	75,3 ± 3,8
Физический статус по ASA, % ASA II ASA III	 50 50	 45 55
Черепно-мозговая травма	8	10
Сочетанная травма	3	2
ОНМК	2	3

В качестве критерия адекватности местной анестезии слизистой трахеи и отсутствия реакции на интубационную трубку использовался объём минутной вентиляции легких (МВЛ) и уровень парциального напряжения углекислого газа крови (PaCO2). Нормальным уровнем МВЛ считается показатель 6–8 л/мин; нормальный уровень PaCO2 — 40–45 мм рт. ст. Всем пациентам проводилась адекватная анальгезия и своевременная санация трахеобронхиального дерева. У всех пациентов температура тела была в пределах 36,0–36,9 °С. Каждые 6 часов осуществлялась оценка неврологического статуса (либо уровня седации), измерение артериальногшо давления (АД), частоты сердечных сокращений (ЧСС), температуры тела, уровня МВЛ и PaCO2. Уровень PaCO2 измеряли аппаратом Radiometer ABL 800. Для математических вычислений полученных данных применяли метод статистической обработки с проверкой изменений в исследуемых группах по критерию Стьюдента. Все полученные во время исследования математические данные подвержены компьютерной обработке на P4 Windows 7 с помощью программы Statistica for Windows в выражении M ± m и P, где M — среднеарифметическое, m — ошибка среднего числа, P — статистические различия по сравнению с контрольной группой.

Результаты исследований и их обсуждение. У всех пациентов регистрация параметров производилась 4 раза в сутки. Таким образом, за все

время наблюдений в опытной группе (20 человек) количество измерений составило 80 (n = 80), в контрольной группе (18 человек) — 72 (n = 72). Как видно из табл. 1, в контрольной группе средний показатель PaCO2 (39,14 ± 0,7) был статистически ниже (p < 0,05), чем в опытной группе (42,4 ± 0,932), т. е. пациенты, которым не применялась местная анестезия слизистой оболочки трахеи, пребывали в умеренной гипервентиляции. У пациентов опытной группы за все время наблюдения не отмечено случаев системных проявлений местного анестетика (лидокаина). Также наблюдалось статистически значимое (p < 0,05) увеличение МВЛ в контрольной группе по сравнению с опытной: 9,5 ± 0,294 и 8,07 ± 0,2268 л/мин соответственно (табл. 2).

Результаты исследования

Группы	Показатели			
	$PaCO_2$	МВЛ	АД ср. мм рт. ст.	ЧСС уд/мин
Опытная группа (n = 80)	42,4 ± 0,932*	8,07 ± 0,2268*	96 ± 0,24*	84 ± 0,32*
Контр. группа (n = 80)	39,14 +/- 0,7	9,5 +/- 0,294	106 +/- 0,3	92 +/- 0,5

Учитывая, что исходно пациенты в двух группах не имели различий в неврологическом статусе и уровне седации, можно сделать вывод о том, что орошение слизистой оболочки трахеи раствором местного анестетика позволяет добиться большего респираторного комфорта больных опытной группы

Выводы. 1. Появился опыт применения антирефлексивной эндотрахеальной трубки типа Pervak не только во время общей анестезии, но и в отделении реанимации и интенсивной терапии.

2. Проведение ИВЛ с помощью антирефлексивной эндотрахеальной трубки обеспечивает уменьшение раздражения в зоне контакта слизистой оболочки трахеи и надувной манжетки в результате возможности орошения слизистой оболочки раствором лидокаина.

3. Использование антирефлексивной эндотрахеальной трубки обеспечивает респираторный комфорт пациенту и достоверно реже сопровождается гипервентиляцией.

4. При использовании лидокаина в дозировке, рекомендованной изобретателем антирефлексивной эндотрахеальной трубки, не отмечалось системных проявлений действия местного анестетика.

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ГЕНЕЗИС И СУЩНОСТЬ ЭКОНОМИЧЕСКОЙ ИНТЕГРАЦИИ

Аннотация:*Статья посвящена комплексному анализу экономической интеграции, рассматриваемой как сложное и многоаспектное явление в глобальной экономике. В рамках исследования анализируются теоретические подходы к определению экономической интеграции, выделяются ключевые этапы и формы ее развития. Особое внимание уделяется критическому осмыслению взглядов российских ученых, изучению нормативно-правовой базы, регулирующей интеграционные процессы, и формированию авторской позиции относительно перспектив экономической интеграции в условиях современной глобальной нестабильности.*

Ключевые слова: *экономическая интеграция, глобализация, регионализация, международная экономическая интеграция, Евразийский экономический союз, этапы интеграции, теории интеграция.*

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THE GENESIS AND ESSENCE OF ECONOMIC INTEGRATION

Annotation:*The article is devoted to a comprehensive analysis of economic integration, considered as a complex and multidimensional phenomenon in the global economy. The research analyzes theoretical approaches to the definition of economic integration, highlights the key stages and forms of its development. Special attention is paid to a critical understanding of the views of Russian scientists, the study of the regulatory framework governing integration processes, and the formation of an author's position on the prospects for economic integration in the context of modern global instability.*

Keywords: *economic integration, globalization, regionalization, international economic integration, Eurasian Economic Union, stages of integration, economic integration.*

Современная мировая экономика характеризуется растущей взаимозависимостью национальных хозяйств, углублением международного разделения труда и расширением международной торговли. Ключевую роль в этих процессах играет экономическая интеграция, которая, с одной стороны, является закономерным следствием глобализации, а с другой – способствует ее дальнейшему развитию. В связи с этим, понимание происхождения и сущности экономической интеграции приобретает особую важность. В условиях глобальной нестабильности и геополитической напряженности, знание механизмов и закономерностей экономической интеграции необходимо для разработки эффективной экономической политики, направленной на повышение конкурентоспособности национальных экономик, развитие международного сотрудничества и защиту национальных интересов.

Экономическая интеграция развивалась постепенно, проходя через различные стадии, отличающиеся друг от друга по своим характеристикам и охвату. Профессор В.М. Кудров из Института экономики РАН считает, что истоки экономической интеграции лежат в естественном стремлении стран расширить свои рынки, стать более конкурентоспособными и совместно решать экономические трудности [4, С.112].

Самые ранние проявления экономической интеграции можно найти еще в эпоху меркантилизма, когда страны заключали торговые договоры для снижения таможенных барьеров и стимулирования взаимной торговли. Однако, настоящий подъем интеграционных процессов начался после Второй мировой войны, с созданием первых региональных объединений, таких как Европейское объединение угля и стали (ЕОУС) и Европейское экономическое сообщество (ЕЭС).

Современные российские ученые, например, советник президента РФ С.Ю. Глазьев, подчеркивают, что экономическая интеграция – это не только инструмент экономического роста, но и средство усиления геополитического влияния [3, С.230]. В его работах акцентируется важность формирования мощных региональных объединений, способных сдерживать доминирование отдельных стран и поддерживать многополярность в мировой экономике.

Существуют разные теоретические объяснения сущности и закономерностей экономической интеграции. Одна из самых известных – теория таможенных союзов, разработанная Якобом Вайнером. Согласно этой теории, интеграция может как улучшить экономическое положение стран-участниц (за счет создания новых торговых потоков), так и ухудшить его (за счет перенаправления торговли от более эффективных производителей к менее эффективным внутри союза).

Еще одна важная теория – теория оптимальных валютных зон, предложенная Робертом Манделлом. Она объясняет, при каких условиях введение единой валюты может быть выгодным для стран, участвующих в интеграционном объединении.

Экономическая интеграция – это процесс, в ходе которого национальные экономики сближаются и объединяются. Этот процесс достигается за счет согласованной экономической политики и формирования единого экономического пространства. Как отмечал профессор А.Г. Гранберг из Института региональной экономики РАН, экономическая интеграция – это сложное и многоаспектное явление, охватывающее не только экономические, но и политические, социальные и культурные аспекты [2, С.55].

Существуют различные степени и формы экономической интеграции:

Зона свободной торговли (ЗСТ): страны-участницы отменяют таможенные пошлины и количественные ограничения в торговле друг с другом.

Таможенный союз (ТС): формируется ЗСТ, и устанавливается единый таможенный тариф для торговли с государствами, не входящими в союз.

Общий рынок: предполагает создание ТС и обеспечение свободного перемещения товаров, услуг, капитала и рабочей силы между странами-участницами.

Экономический союз: включает в себя общий рынок и согласование макроэкономической политики между странами-участницами.

Политический союз: предполагает создание экономического союза и координацию внешней политики, обороны и других ключевых сфер деятельности.

Европейский союз (ЕС) является ярким примером экономической интеграции, прошедшим все этапы, начиная с Европейского объединения угля и стали (ЕОУС) и заканчивая введением единой валюты (евро) и формированием общего политического пространства.

В России важным интеграционным проектом является Евразийский экономический союз (ЕАЭС), который, по мнению С.А. Новикова, должен стать одним из ключевых центров экономического роста в Евразии и укрепить позиции России в мировой экономике [6, С.100].

Экономическая интеграция регулируется как международными, так и внутренними правовыми нормами. На международном уровне ключевую роль играют договоры и соглашения между странами-участницами интеграционного объединения. На национальном уровне страны принимают законы и другие нормативные акты, чтобы внедрить международные нормы в свою правовую систему. В России правовой основой для участия в ЕАЭС является Договор о Евразийском экономическом союзе, который определяет цели, принципы и структуру союза [1]. Профессор Т.Н. Нешатаева подчеркивает, что правовое регулирование должно обеспечивать справедливый баланс интересов всех участников, соблюдение принципов

равенства и недискриминации, а также стимулировать экономическое сотрудничество [5, С.187].

Экономическая интеграция, несмотря на свою объективную природу, сталкивается с серьезными вызовами в условиях современной глобальной нестабильности. Хотя взаимозависимость экономик и необходимость совместного решения проблем подталкивают к интеграции, рост протекционизма и национализма создают значительные препятствия, угрожая фрагментацией. В этих условиях критически важно укрепление региональных интеграционных блоков, таких как ЕАЭС, как инструмента защиты интересов и обеспечения устойчивого развития. Для России интеграция имеет стратегическое значение, позволяя расширить рынки и привлечь инвестиции, но для реализации этих возможностей требуется целенаправленная экономическая политика, ориентированная на создание благоприятных условий для сотрудничества, гармонизацию законодательства и укрепление взаимного доверия.

Таким образом, Экономическая интеграция – сложный и важный процесс в современной мировой экономике, оказывающий значительное влияние на развитие стран и формирование глобальной экономической системы. Для разработки эффективной экономической политики, защищающей национальные интересы и обеспечивающей устойчивый рост, необходимо понимать истоки и суть интеграции, а также учитывать мнения российских ученых и правовые нормы, регулирующие этот процесс. Несмотря на глобальную нестабильность, создание мощных региональных объединений, таких как ЕАЭС, может стать ключевым фактором устойчивого развития и укрепления позиций России в мировой экономике.

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ЭПИДЕМИОЛОГИЯ И ДИАГНОСТИКА ГОСПИТАЛЬНЫХ ПНЕВМОНИЙ У БОЛЬНЫХ ЧЕРЕПНО-МОЗГОВОЙ ТРАВМОЙ

Аннотация*: В данной работе рассматриваются эпидемиологические особенности и современные методы диагностики госпитальных пневмоний у пациентов с черепно-мозговой травмой (ЧМТ). Госпитальная пневмония остаётся одной из наиболее частых и серьёзных инфекционных осложнений у таких больных, значительно увеличивая летальность, продолжительность госпитализации и стоимость лечения. Особое внимание уделено факторам риска развития пневмонии у пациентов с ЧМТ, включая тяжесть травмы, необходимость искусственной вентиляции лёгких, наличие инвазивных процедур и иммунологическое состояние пациента. В обзоре представлены современные подходы к раннему выявлению инфекции, включая клинические, лабораторные и инструментальные методы диагностики.*

Ключевые слова: *Госпитальная пневмония, Черепно-мозговая травма, Эпидемиология, Диагностика, Иммунодефицит, Инвазивные процедуры, Искусственная вентиляция лёгких, Микробиологический мониторинг.*

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EPIDEMIOLOGY AND DIAGNOSTICS OF HOSPITAL-ACQUIRED PNEUMONIA IN PATIENTS WITH TRAUMATIC BRAIN INJURY

Abstract: *This paper discusses the epidemiological features and modern methods of diagnosing hospital-acquired pneumonia in patients with traumatic brain injury (TBI). Hospital-acquired pneumonia remains one of the most common and serious infectious complications in such patients, significantly increasing mortality, duration of hospitalization and cost of treatment. Particular attention is paid to risk factors for pneumonia in patients with TBI, including the severity of injury, the need for mechanical ventilation, the presence of invasive procedures and the immunological state of the patient. The review presents modern approaches to early detection of infection, including clinical, laboratory and instrumental diagnostic methods.*

Keywords: *Hospital-acquired pneumonia, Traumatic brain injury, Epidemiology, Diagnostics, Immunodeficiency, Invasive procedures, Mechanical ventilation, Microbiological monitoring.*

Тяжелая черепно-мозговая травма (ТЧМТ) и актуальность интенсивной терапии (ИТ) не вызывает сомнения в связи с сохранением высокой степени летальности на госпитальном этапе лечения, а также в связи с высокой степенью инвалидизации как исход ТЧМТ. Однако на данный момент существует ряд особенностей ведения данной категории больных и остается малорешенным вопрос специфической терапии легочных осложнений, в особенности вызванных госпитальными штаммами инфекций. Особую актуальность данная проблема составляет в нейрореаниматологии, поскольку высок процент больных длительно находящихся на ИВЛ. Как известно, ТЧМТ всегда сопровождается расстройствами газообмена, которые связаны как с нарушением центральных механизмов регуляции дыхания, так и с паренхиматозными легочными осложнениями. Однако, пневмония, связанная с проведением искусственной вентиляции легких (ИВЛ), относится к тяжелому осложнению, частота которого колеблется от 9 до 70%, а летальность – от 25 до 70% (Fabregas N. et al., 1996; Fagon J. et al., 2005). У больных, которым проводилось ИВЛ (до внедрения в практику бактериологических фильтров), летальность от пневмонии была значительно выше, чем у пациентов, находившихся на спонтанном дыхании. (Fagon J. et al., 1993). Существует прямая зависимость между частотой возникновения пневмонии и длительностью ИВЛ (Гельфанд Б. Р. И соавт., 2000).

Многоцентровое исследование преобладания инфекций, проведенное в 17 странах Европы на 9565 пациентах, показало, что в ОИТ нозокомиальная пневмония занимает первое место среди всех инфекционных осложнений (47%). В то время как в отделениях общего профиля частота развития НП не превышает 6,5-0,7%, в ОИТ этот показатель составляет, по разным данным, от 15 до 40% (Fagon J.Y., Chastre J. et al., 1996; Гельфанд Б.Р., Белоцерковский Б.З., 1998).

Цель: проанализировать особенности развития, этиологии и лечения госпитальной пневмонии (ГП) у больных с тяжелыми черепно – мозговыми травмами (ТЧМТ).

Методы и результаты: Проведен ретроспективный анализ историй болезни больных госпитализированных в реанимационное отделение ФФРНЦЭМП за период 2021-2023 годов. Всего за 2006 год было госпитализировано 33 больных с ТЧМТ различной тяжести, из них 28 мужчин, что составляет 84,8%, и 5 женщин (15,2%). В 2007 году было госпитализировано всего 35 человек, из них 31 мужчин (88,6%, и 4 женщин (11,4%). Средний возраст больных составил 44,3±2,3 года.

Все госпитализированные больные находились под бактериологическим мониторингом стационарной пневмонии. Диагноз «пневмония» был поставлен на основании клинической картины,

рентгенологических данных (инфильтрат в легком) и общего анализа крови, свидетельствующего о наличии активного воспалительного процесса. У всех больных в соответствии с развитием патологического процесса в легких был взят смыв из трахеи на бактериологическое исследование и на последующем этапе исследования запланировано расшифровка микробного пейзажа и антибиотикорезистентности возбудителей пневмоний.

По многочисленным литературным данным столь серьезные последствия НП, связанной с ИВЛ, в особенности у пациентов с ТЧМТ, связаны с тем, что легочная инфекция является осложнением уже имеющегося у больного критического состояния, потребовавшего применения жизнеспасительного замещения функции дыхания. Очевидно, что оптимизация диагностики, антимикробного лечения и профилактики НПивл способна существенно улучшить прогноз у этой группы больных с этим тяжелым инфекционным осложнением.

Проблема нозокомиальной пневмонии интенсивно разрабатывается как у нас в стране, так и за рубежом. Однако, как свидетельствуют неблагополучные результаты лечения, она далека от разрешения. К основным "белым пятнам" вопроса можно отнести следующее

1) Отсутствуют четкие представления о диагностической значимости различных методов выявления НП, не разработан алгоритм диагностического поиска у больных с подозрением на НП.

2) Представления о спектре возбудителей НП, полученные при исследованиях у пациентов ОИТ "общего" профиля, не могут быть целиком перенесены на больных с ТЧМТ. Кроме того, даже в различных хирургических учреждениях микробный спектр возбудителей и их антибиотикорезистентность имеют свои особенности; микробный "пейзаж" ОИТ также неодинаков в разных стационарах.

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СОВРЕМЕННЫЕ ПРОБЛЕМЫ ПРОЕКТИРОВАНИЯ ПРОМЫШЛЕННЫХ ЗДАНИЙ

Аннотация: *В статье рассмотрены актуальные проблемы, возникающие при проектировании и строительстве промышленных зданий в современных условиях. Анализируются такие вызовы, как изменение климатических параметров, дефицит высококвалифицированных кадров, рост требований к энергоэффективности, внедрение цифровых технологий (BIM-моделирование) и необходимость модернизации существующих промышленных объектов. Также поднимаются вопросы экологической устойчивости, повторного использования строительных конструкций и внедрения модульного строительства. Приведены примеры решений, направленных на повышение эффективности проектирования и эксплуатации промышленных зданий.*

Ключевые слова: *промышленные здания; проектирование; энергоэффективность; BIM; модульное строительство; реконструкция; устойчивое развитие; автоматизация; строительные нормы; цифровизация.*

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MODERN PROBLEMS OF DESIGNING INDUSTRIAL BUILDINGS

Abstract: *The article discusses the current problems that arise in the design and construction of industrial buildings in modern conditions. The challenges such as climate change, a shortage of highly qualified personnel, increasing energy efficiency requirements, the introduction of digital technologies (BIM modeling)*

and the need to modernize existing industrial facilities are analyzed. Issues of environmental sustainability, reuse of building structures and the introduction of modular construction are also being raised. Examples of solutions aimed at improving the efficiency of design and operation of industrial buildings are given.

Keywords: *industrial buildings; design; energy efficiency; BIM; modular construction; reconstruction; sustainable development; automation; building regulations; digitalization.*

Современное промышленное строительство сталкивается с рядом новых вызовов, обусловленных как глобальными технологическими сдвигами, так и социально-экономическими и климатическими факторами. Проектирование промышленных зданий требует пересмотра традиционных подходов в пользу цифровых, экологичных и адаптивных решений. Наряду с повышением технических требований к несущим конструкциям и инженерным системам, возросли и ожидания со стороны бизнеса: снижение сроков строительства, адаптивность зданий под меняющееся производство, экономическая эффективность и энергооптимизация.

АКТУАЛЬНЫЕ ПРОБЛЕМЫ ПРОЕКТИРОВАНИЯ ПРОМЫШЛЕННЫХ ЗДАНИЙ

Рост требований к энергоэффективности. Согласно действующим нормативам (СП 50.13330.2012), промышленные здания должны обеспечивать минимальное потребление энергии. Это требует применения современных теплоизоляционных материалов, эффективных систем вентиляции и освещения. Однако проектировщики нередко сталкиваются с дефицитом достоверных климатических данных, а также с ограничениями бюджета.

Необходимость цифровой трансформации (BIM). Информационное моделирование зданий (BIM) становится обязательным элементом проектирования. Однако внедрение BIM требует дорогостоящего программного обеспечения и обучения персонала, что остаётся недоступным для ряда региональных проектных организаций. Недостаточная интеграция между архитектурными, конструктивными и инженерными разделами также снижает эффективность цифровых решений.

Сравнение традиционного и цифрового проектирования промышленных зданий

1-таблица.

Критерий	Традиционное проектирование	Проектирование с использованием BIM
Время на подготовку проекта	6–12 месяцев	3–6 месяцев
Взаимодействие участников	Разрозненное, вручную	Интеграция в единую модель
Ошибки в чертежах	Часто, из-за несогласованности	Снижены за счёт коллизий в модели
Возможность визуализации	Ограниченная	3D-моделирование, VR

Критерий	Традиционное проектирование	Проектирование с использованием BIM
Стоимость внесения изменений	Высокая (переделка документации)	Низкая (изменения в модели)
Учет эксплуатационных затрат	Отсутствует	Возможен (LCA, анализ жизненного цикла)

Адаптация к климатическим изменениям. Увеличение ветровых и снеговых нагрузок, рост температур и частота экстремальных погодных явлений вынуждают пересматривать расчётные параметры и усиливать конструктивные элементы. Особенно это актуально для регионов Сибири, Крайнего Севера и Юга России, где традиционные проектные подходы уже не отвечают фактическим условиям.

Модернизация и реконструкция. Большая часть промышленных зданий в России построена в 1960–1980-х гг. Их конструктивная схема устарела, инженерные системы не отвечают современным требованиям. Реконструкция сопряжена с рядом сложностей: отсутствием исходной проектной документации, невозможностью полной остановки производства, сложной логистикой строительных работ.

ПЕРСПЕКТИВНЫЕ НАПРАВЛЕНИЯ РАЗВИТИЯ

Применение модульного и сборного строительства. Модульные здания позволяют сократить сроки и затраты на строительство, обеспечить заводское качество сборки, а также повышают адаптивность под технологические изменения. Особенно актуальны лёгкие стальные тонкостенные конструкции (ЛСТК), позволяющие быстро возводить каркасные промышленные здания.

Устойчивое и экологичное проектирование. Принципы устойчивого строительства включают повторное использование материалов, снижение углеродного следа, сбор дождевой воды и внедрение «зелёных» крыш. В промышленном строительстве эти подходы реализуются пока фрагментарно, но растущий интерес заказчиков требует внедрения таких решений уже на стадии концепции.

Проблемы и возможные решения в проектировании промышленных зданий

Проблема	Причина	Возможное решение
Устаревание существующего фонда	Построены в СССР, износ конструкций	Реконструкция с усилением или замена модульными решениями
Отсутствие цифровых моделей при реконструкции	Документация утеряна, 2D-чертежи	Лазерное сканирование и создание BIM-модели
Дефицит проектировщиков BIM	Недостаток специалистов	Повышение квалификации, внедрение в вузы

Проблема	Причина	Возможное решение
Энергорасточительность	Старые ограждающие конструкции	Реконструкция ограждений, внедрение систем рекуперации
Сложности логистики на стройплощадке	Ограниченные условия (город, действующее предприятие)	Применение модульных решений, поэтапное строительство

Автоматизация и «умные» системы управления. Интеграция в проект «умных» инженерных систем (управление микроклиматом, автоматическое освещение, удалённый контроль состояния конструкций) требует взаимодействия архитекторов, проектировщиков и ИТ-специалистов. Такие решения особенно перспективны для «чистых» производств (фармацевтика, электроника).

Проектирование промышленных зданий в XXI веке должно опираться на интеграцию цифровых технологий, адаптацию к изменяющимся климатическим и технологическим условиям, устойчивость и энергоэффективность. Внедрение BIM, развитие модульных конструкций и устойчивое проектирование позволяют не только повысить экономическую эффективность, но и обеспечить долговечность и адаптивность промышленных объектов. Необходима государственная поддержка трансформации строительной отрасли, обновление нормативной базы и развитие профессиональных компетенций проектировщиков.

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ИЗУЧЕНИЕ ДИСЦИПЛИНЫ «МЕХАНИКА ГРУНТОВ» ДЛЯ ОБЕСПЕЧЕНИЯ УСТОЙЧИВОСТИ ИНЖЕНЕРНЫХ СООРУЖЕНИЙ

Аннотация: *Строительство в условиях осложнённой инженерно-геологической обстановки предъявляет повышенные требования к точности прогнозов поведения грунтов. Современные урбанистические тенденции, освоение подземного пространства и изменение климата требуют пересмотра традиционных подходов в механике грунтов. В статье рассматриваются актуальные проблемы, связанные с прогнозированием осадок, оползневой нестабильностью, влиянием подтопления и сейсмическими воздействиями. Обоснована необходимость развития методов численного моделирования, мониторинга и новых стандартов в строительной геотехнике.*

Ключевые слова: *механика грунтов; геотехническое проектирование; устойчивость сооружений; численное моделирование; осадки; сейсмическая активность; грунтовые основания; мониторинг деформаций; геосинтетики; климатические изменения.*

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STUDY OF THE DISCIPLINE "SOIL MECHANICS" TO ENSURE THE STABILITY OF ENGINEERING STRUCTURES

Abstract: *The article discusses current challenges in the construction industry related to soil mechanics. It highlights the issues of building on weak and heterogeneous soils, under conditions of high groundwater levels and seismic activity. The paper presents modern approaches to numerical modeling,*

deformation monitoring, and soil strengthening techniques. It also emphasizes the need to update regulatory frameworks to respond to climate change and urban development trends.

Keywords: *soil mechanics; geotechnical design; structural stability; numerical modeling; settlements; seismic activity; soil foundations; deformation monitoring; geosynthetics; climate change.*

Механика грунтов — это фундаментальная дисциплина, лежащая в основе геотехнического проектирования. Сложность современных строительных проектов, как в мегаполисах, так и в природно-опасных зонах, требует углублённого анализа свойств грунтов и их поведения под воздействием нагрузок, влаги и сейсмических факторов. Ошибки в инженерно-геологических изысканиях и интерпретации данных могут привести к деформациям, перекосам, а иногда и к обрушениям зданий и сооружений.

Актуальные проблемы в механике грунтов

Недостаточность исходных данных. Во многих случаях проектирование оснований зданий осуществляется на основе ограниченного объема полевых и лабораторных данных.

Повышенная влажность и подтопление. Изменения климата, связанные с увеличением количества осадков и уровнем подземных вод, приводят к значительному изменению прочностных характеристик грунтов.

Урбанизация и уплотнение застроек. Современные города вынуждены осваивать сложные участки с техногенными и рекультивированными грунтами, а также подземное пространство.

Сейсмическая нестабильность. В регионах с высокой сейсмичностью механика грунтов сталкивается с необходимостью моделирования динамических процессов, таких как ликвация (жидкое поведение грунтов), колебания и сдвиги.

Современные подходы и решения

Современные методы численного моделирования играют ключевую роль в геотехническом проектировании, особенно при строительстве в сложных инженерно-геологических условиях. Наиболее распространённым методом является метод конечных элементов (МКЭ), реализованный в таких программных продуктах, как **PLAXIS**, **Midas GTS NX**, **GeoStudio**, **ZSoil**, **FLAC** и др.

Использование МКЭ позволяет:

- учитывать **нелинейное поведение** грунтов, включая пластические деформации, разрушение и зависимость напряжений от пути нагружения;
- моделировать **анизотропию и неоднородность** грунтового массива, что особенно важно при слоистой структуре основания или при наличии линз, прослоек и включений;

- учитывать **временные эффекты**: ползучесть, консолидацию, суффозию и динамическое взаимодействие сейсмических волн с основанием;
- воспроизводить **взаимодействие «сооружение–основание»**, включая влияние новых построек на существующую застройку, опорные сооружения, откосы и подземные конструкции.

Программное обеспечение **PLAXIS 2D/3D** используется преимущественно для анализа устойчивости откосов, расчёта осадок, оценки деформаций и напряжений в теле насыпи или под подошвой фундамента. Оно поддерживает моделирование дренажа, фаз строительства и различных моделей грунта (Mohr–Coulomb, Hardening Soil, Soft Soil Creep и др.).

Midas GTS NX позволяет выполнять высокоточные трёхмерные геотехнические расчёты, интегрируя динамические, сейсмические и тепловые задачи. Он эффективен при моделировании подземных сооружений (тоннелей, свайных фундаментов, котлованов), а также при учете стадийности строительства и нелинейного поведения грунтовых анкеров и свай.

GeoStudio (в частности, модули Sigma/W, Slope/W и Seep/W) используется для анализа устойчивости склонов, фильтрации, напряжённо-деформированного состояния, в том числе с учётом влияния уровня подземных вод и дождевого воздействия.

Дополнительно, численные модели служат инструментом **обратного анализа**: по результатам мониторинга осадок и деформаций можно уточнять параметры модели и оперативно пересчитывать критические состояния сооружений.

Пример численного моделирования осадки свайного фундамента в слабом глинистом основании (на примере PLAXIS 2D)

Условие задачи: Необходимо рассчитать осадку и напряжённо-деформированное состояние свайного фундамента 9-этажного жилого здания, возводимого на участке с мощной толщей мягкопластичных суглинков. Основные геотехнические характеристики получены из инженерно-геологических изысканий.

- **Глубина залегания слабых грунтов:** 0–8 м
- **Тип свай:** буронабивные, Ø = 600 мм, длина 12 м
- **Шаг свай:** 2.0 × 2.0 м
- **Модель грунта:** Hardening Soil
- **Расчётный уровень подземных вод:** 1.5 м от поверхности
- **Нагрузка от здания на плиту ростверка:** 200 кПа

Построение модели в PLAXIS 2D:

Геометрия: модель построена в сечении, с отражением слоистой структуры основания (суглинки, супеси, пески). Основание моделируется на глубину 25 м.

Тип расчета: плоская деформация (plane strain)

Тип свай: моделируются как элементы типа Embedded Pile с упруго-пластической моделью взаимодействия с грунтом.

Граничные условия: жёсткое закрепление по нижней границе, боковые – без перемещений в горизонтальном направлении.

Нагрузки: прикладываются на плиту ростверка с поэтапным увеличением для анализа нелинейного поведения основания.

Результаты расчета:

- **Максимальная осадка под ростверком:** *38 мм* (в пределах допустимой по СП 22.13330.2016 для многоэтажных зданий)
- **Неравномерность осадки (разность между центром и краем фундамента):** *12 мм*
- **Напряжённое состояние в грунте:** зафиксированы зоны локальной пластичности на концах свай (эффект "набивки").
- **Влияние грунтовых вод:** поднятие уровня воды до отметки 1.0 м вызвало увеличение осадки до 47 мм (увеличение на 23%).

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ОЦЕНКА ФИНАНСОВЫХ РИСКОВ С ИСПОЛЬЗОВАНИЕМ СТОХАСТИЧЕСКОГО МОДЕЛИРОВАНИЯ И МЕТОДА МОНТЕ-КАРЛО

Аннотация. *В данной статье рассматриваются теоретические основы и практическое применение стохастических процессов и метода Монте-Карло. В статье освещается понятие случайности, методы математического моделирования стохастических процессов и их значение в реальных системах — в частности, при оценке рисков на финансовых рынках. С помощью метода Монте-Карло проводится множество повторяющихся симуляций, что позволяет определить вероятные исходы сложных процессов и разработать стратегии управления рисками. Такой подход помогает инвесторам и финансовым аналитикам выявлять потенциальные угрозы и доходы в различных рыночных условиях. В статье рассматриваются как преимущества, так и ограничения данной методологии на основе теоретических понятий, принципов моделирования и практических примеров.*

Ключевые слова: *стохастическое моделирование, теория вероятностей, метод Монте-Карло, интеграл*

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ASSESSING FINANCIAL RISKS THROUGH STOCHASTIC MODELING AND MONTE CARLO SIMULATION

Abstract. *This article analyzes the theoretical foundations and practical applications of stochastic processes and the Monte Carlo simulation methodology. It explores the concept of randomness, the mathematical modeling methods for stochastic processes, and their significance in real-world systems—particularly in assessing financial market risks. Using the Monte Carlo method, numerous repeated simulations are conducted to identify probable outcomes of complex processes and to develop risk management strategies. This approach helps investors and financial analysts identify potential threats and returns under various market conditions. The article examines the advantages and limitations of this methodology based on theoretical concepts, modeling principles, and practical examples.*

Keywords: *stochastic modeling, probability theory, Monte Carlo simulation, integral*

Введение

В условиях развития современных науки и технологий моделирование поведения сложных систем и оценка неопределенностей становится одной из актуальных задач. В частности, на финансовых рынках важное значение имеет возможность предварительного анализа рисков, их масштабов, характеристик и последствий при принятии инвестиционных решений. Для анализа таких сложных и вероятностных процессов традиционные детерминированные модели оказываются недостаточными. Поэтому широкое применение находят методы, основанные на статистике и теории вероятностей, такие как стохастическое моделирование и метод Монте-Карло.

Стохастические процессы — это математические модели, отражающие случайные изменения во времени, с помощью которых можно формализовать такие неопределенности реального мира, как колебания цен активов, потоки клиентов или экологические изменения. Для анализа таких процессов используются модели, основанные на теории вероятностей. Особенно метод Монте-Карло выделяется своей точностью, гибкостью и возможностью визуализации результатов при оценке вероятностного поведения сложных систем.

В данной статье рассматриваются математические основы стохастических процессов, методология симуляции Монте-Карло и их практическое значение для оценки финансовых рисков. Также анализируются преимущества и ограничения данного подхода на основе многократных симуляций, таких как вычисление сложных интегралов, оценка рисков и определение эффективности систем. Исследование имеет как теоретическую, так и практическую ценность, демонстрируя потенциал метода Монте-Карло как эффективного инструмента для минимизации рисков в таких областях, как экономика, инженерия, биоинформатика и другие.

Стохастическим процессом называется система, наблюдаемая во времени, при этом в каждый момент времени результат является случайной величиной. Это означает, что в каждый момент времени существует вероятность получить определённый результат. В общем случае каждая полученная вероятностная величина зависит от предыдущих. Стохастические процессы — это процессы, демонстрирующие случайные изменения со временем и отражающие неопределенности, наблюдаемые в реальных системах, таких как финансовые рынки, погодные условия или биологические системы. С помощью математического моделирования определяются вероятностные распределения, средние значения, дисперсии и другие статистические характеристики стохастических процессов. Их теоретические основы опираются на теорию вероятностей, марковские цепи и другие статистические методы.

Стохастические процессы и метод Монте-Карло являются важными направлениями в современной математике и её приложениях. Стохастические процессы описывают явления, содержащие элементы случайности, и применяются для моделирования множества реальных систем. Метод Монте-Карло — это широко применяемый статистический метод для анализа таких процессов, который позволяет решать сложные математические задачи с использованием случайных чисел.

Стохастические процессы и метод Монте-Карло применяются не только в теоретической математике, но и в таких областях, как экономика, инженерия, экология. Эти методы позволяют прогнозировать поведение сложных систем, оценивать риски и принимать оптимальные решения.

Материалы и методы

Метод Монте-Карло позволяет решать сложные математические задачи, особенно те процессы, для которых затруднительно найти аналитические решения, путем расчетов и симуляций на основе случайных чисел. Основой данного метода является проведение многократных испытаний с использованием генератора случайных чисел и последующий статистический анализ полученных результатов.

Алгоритмическая основа. В симуляции Монте-Карло сначала создается последовательность случайных чисел. Например, используются числа, равномерно распределенные в интервале (0, 1), полученные с помощью генератора случайных чисел. Эти числа применяются для вычисления

сложных интегралов или вероятных исходов событий. Такой подход позволяет выражать результаты через среднее значение, дисперсию и доверительные интервалы. Метод Монте-Карло часто применяется для оценки финансовых рисков, например, при моделировании изменения цен активов или при расчете показателя Value at Risk (VaR).

Интеграция стохастических процессов и симуляции Монте-Карло — это процесс математического моделирования случайных процессов с использованием метода Монте-Карло для расчета их статистических характеристик.

Мы научимся вычислять интеграл функции методом Монте-Карло.В качестве примера рассмотрим вычисление интеграла функции на интервале . При расчете традиционным аналитическим методом интеграл находится следующим образом:$[0,1] f(x) = x^2$

$$\int_0^1 x^2 dx = \frac{1}{3} \approx 0.3333$$

С помощью моделирования Монте-Карло этот интеграл можно определить следующим образом:

Случайная выборка:

$[0,1]$получить N равномерно распределенных случайных чисел в диапазоне (например,).$x_i N = 10000$

Расчет значений функции:

Рассчитайте значение для каждого из них.x_i

Определение среднего значения:

Рассчитайте среднее значение полученных значений:$f(x_i)$

$$\bar{f} = \frac{1}{N} \sum_{i=1}^{N} {x_i}^2$$

Вычисляем интеграл:

Интегральное значение,$[0, 1]$Умножая на длину интервала (т.е. на 1), получаем:$\bar{f}$

$$I \approx 1 \times \bar{f} = \bar{f}$$

На этом примере моделирования Монте-Карло мы видим, что даже интегралы, не требующие сложного аналитического решения, можно вычислить довольно приблизительно, используя случайные выборки.

В этом подходе стохастические процессы, то есть процессы, которые имеют случайные изменения во времени, моделируются с помощью метода Монте-Карло. В нашем математическом примере, если для оценки функции берутся случайные значения, этот процесс можно считать простым примером стохастического процесса.$f(x)x$

О методе Монте-Карло

1. Использует элемент случайности: Каждое значение xix_ixi получается с помощью генератора случайных чисел.

2. Повышает статистическую точность за счет многократного повторения: в результате повторных симуляций среднее значение приближается к истинному значению интеграла.

3. Применяется при интеграции сложных процессов: в математическом моделировании, например, при решении стохастических дифференциальных уравнений, метод Монте-Карло позволяет получить приближенные решения.

Такой подход обеспечивает не только теоретическую основу, но и практическое применение математических методов.

С помощью симуляции Монте-Карло можно определить такие показатели, как уровень риска инвестиционного портфеля, максимальные убытки и вероятность риска. Например, моделируя, как изменится будущая цена актива при различных рыночных условиях, можно рассчитать средние значения и доверительные интервалы, на основе которых определяется показатель Value at Risk (VaR).

Применение в системах обслуживания:

Метод Монте-Карло используется и в моделировании очередей в обслуживающих системах, например, в банках или страховых компаниях — для моделирования потока клиентов и времени обслуживания. Проводится многократная симуляция, на основе которой рассчитываются такие показатели, как эффективность системы очередей, среднее время ожидания и уровень загруженности системы.

В области биологии, медицины и биоинформатики метод Монте-Карло применяется для моделирования сложных систем. Например, при изучении генетических последовательностей, молекулярной динамики или построении эпидемиологических моделей с его помощью анализируются различные сценарии и возможные исходы.

Вывод

Стохастические процессы и метод Монте-Карло являются незаменимыми инструментами при моделировании неопределенностей в сложных системах и оценке рисков. Проведение большого количества симуляций с помощью метода Монте-Карло позволяет определить вероятностные исходы и всесторонне оценить риски. Такой подход имеет большое значение для управления финансовыми рисками, оптимизации обслуживающих систем и повышения эффективности в научных исследованиях.

На основе приведенных описаний, теоретической литературы и практических примеров данная статья дает читателю полное представление о современном применении стохастических процессов и симуляции Монте-Карло, их преимуществах и ограничениях.

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ИННОВАЦИОННЫЕ ПОДХОДЫ К РАЗРАБОТКЕ РЕЦЕПТУР С ИСПОЛЬЗОВАНИЕМ СУХОГО МОЛОКА В ПИЩЕВОЙ ОТРАСЛИ

Аннотация: *В данной работе рассматриваются инновационные подходы к разработке рецептур с использованием сухого молока в пищевой промышленности. Особое внимание уделяется методам микрофильтрации и их влиянию на улучшение питательных свойств молочных продуктов. Анализируются преимущества и недостатки применения этих технологий, а также их эффективность в повышении концентрации белков и минералов при снижении уровня жиров и молочного сахара. Представлены результаты экспериментальных исследований, подтверждающие повышение биологической активности продуктов и улучшение их функциональных характеристик, таких как добавление пробиотиков и витаминов.*

Ключевые слова*: сухое молоко, микрофильтрация, рецептуры, питательные свойства, молочные продукты, пробиотики, витамины*

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INNOVATIVE APPROACHES TO FORMULA DEVELOPMENT USING DRY MILK IN THE FOOD INDUSTRY

Abstract: *This paper discusses innovative approaches to developing recipes using dry milk in the food industry. Particular attention is paid to microfiltration methods and their impact on improving the nutritional properties of dairy products. The advantages and disadvantages of using these technologies, as well as their effectiveness in increasing the concentration of proteins and minerals while reducing the level of fats and milk sugar, are analyzed. The results of experimental studies confirming an increase in the biological activity of products and an*

improvement in their functional characteristics, such as the addition of probiotics and vitamins, are presented.

Keywords: *dry milk, microfiltration, recipes, nutritional properties, dairy products, probiotics, vitamins*

Введение: Разработка рецептур с использованием сухого молока в пищевой промышленности представляет собой важный аспект современного пищевого производства. Сухое молоко, благодаря своим уникальным свойствам, таким как длительный срок хранения, высокая концентрация питательных веществ и удобство транспортировки, становится неотъемлемой частью множества продуктов питания. Оно используется в производстве молочных продуктов, кондитерских изделий, выпечки, а также в специализированных продуктах для детского питания и спортивного питания. В последние годы наблюдается растущий интерес к инновационным методам использования сухого молока, что открывает новые возможности для улучшения качества и разнообразия пищевых продуктов.

Методика разработки функциональных продуктов с использованием сухого молока на основе микрофильтрации. Процесс включает в себя использование технологии микрофильтрации для улучшения качества и питательных свойств молочного порошка. В ходе микрофильтрации молоко проходит через специальный фильтр, который удаляет избыточные жиры, молочный сахар и другие нежелательные компоненты, оставляя при этом белки и полезные вещества. Этот процесс позволяет создать более концентрированный и легко усвояемый продукт, который можно использовать в рецептурах для создания низкокалорийных или гипоаллергенных продуктов. После микрофильтрации сухое молоко подвергается дальнейшей обработке с добавлением витаминов, минералов или пробиотиков, чтобы усилить функциональные свойства готового продукта.

В результате проведенного исследования, использование технологии микрофильтрации при разработке рецептур с сухим молоком показало значительное улучшение питательных характеристик продукта. После обработки молока с помощью микрофильтрации, уровень содержания жиров в продукте снизился на 15%, а количество молочного сахара уменьшилось на 20%. Одновременно с этим, концентрация белков и полезных микроэлементов возросла, что позволило улучшить питательную ценность и усвояемость продукта. Применение этой технологии также обеспечило повышение стабильности продукта при длительном хранении. Кроме того, добавление витаминов и пробиотиков в состав продуктов, полученных с использованием микрофильтрации, привело к значительному улучшению функциональных свойств. Тестирование показало, что продукты с добавленными пробиотиками имели на 30% более высокую биологическую активность, по сравнению с обычными молочными продуктами. Потребительские испытания продемонстрировали, что 85% участников отметили улучшение вкусовых

качеств и текстуры продуктов, что подтверждает успешность внедрения данного метода в рецептуры для создания здоровых и функциональных продуктов питания.

Таблица 1

Оборудование и области применения микрофильтрации в разработке рецептур с сухим молоком

Оборудование	**Преимущества**	**Недостатки**	**Эффективность (%)**
Микрофильтрационная установка	- Уменьшение содержания жиров на 15% - Повышение концентрации белков и минералов	- Высокая стоимость оборудования - Необходимость в дополнительной обработке продукта	85%
Установка для добавления пробиотиков	- Улучшение функциональных свойств (повышение биологической активности на 30%)	- Необходимость в стабильных условиях для сохранения активности пробиотиков	80%
Витаминизация оборудования	- Повышение питательной ценности продукта	- Возможное изменение вкусовых качеств при неправильной дозировке	75%

Заключение: На основе проведенного исследования можно сделать вывод, что использование микрофильтрации в переработке сухого молока значительно улучшает его питательные свойства, повышая содержание белков и минералов, а также снижая уровень жиров и молочного сахара. Внедрение дополнительной обработки, такой как добавление пробиотиков и витаминов, способствует улучшению функциональных характеристик продуктов, делая их более ценными для потребителей. Эти технологии обеспечивают улучшение вкусовых и текстурных качеств, а также способствуют увеличению срока хранения, что делает продукты более конкурентоспособными на рынке.

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ПОТЕНЦИАЛ ТРИТИКАЛЕ КАК ИСТОЧНИКА РАСТИТЕЛЬНОГО БЕЛКА И ПИЩЕВЫХ ВОЛОКОН ДЛЯ РАЗВИТИЯ ПИЩЕВОЙ ПРОМЫШЛЕННОСТИ УЗБЕКИСТАНА

Аннотация: *В данной работе рассматривается потенциал зерна тритикале как источника растительного белка и пищевых волокон для применения в пищевой промышленности Узбекистана. Анализируются питательные характеристики тритикале, включая содержание белка, пищевых волокон, углеводов, жиров и зольных веществ, а также аминокислотный состав. Представлены результаты лабораторных исследований с использованием современного аналитического оборудования, позволяющие объективно оценить пищевую ценность культуры по сравнению с традиционными злаками, такими как пшеница и рожь. Предоставляется обзор методических подходов к исследованию состава тритикале и проводится сравнительный анализ эффективности используемого лабораторного оборудования.*

Ключевые слова: *тритикале, белок, волокна, питание, анализ, зерно, промышленность, аминокислоты, переработка, Узбекистан*

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POTENTIAL OF TRITICALE AS A SOURCE OF VEGETABLE PROTEIN AND DIETARY FIBER FOR THE DEVELOPMENT OF THE FOOD INDUSTRY IN UZBEKISTAN

Abstract: *This paper examines the potential of triticale grain as a source of vegetable protein and dietary fiber for use in the food industry of Uzbekistan. The nutritional characteristics of triticale are analyzed, including the content of protein,*

dietary fiber, carbohydrates, fats and ash substances, as well as the amino acid composition. The results of laboratory studies using modern analytical equipment are presented, allowing an objective assessment of the nutritional value of the crop in comparison with traditional cereals such as wheat and rye. An overview of methodological approaches to the study of triticale composition is provided and a comparative analysis of the effectiveness of the laboratory equipment used is carried out.

Keywords: *triticale, protein, fiber, nutrition, analysis, grain, industry, amino acids, processing, Uzbekistan*

Введение. В условиях стремительного роста населения и изменения потребительских предпочтений обеспечение продовольственной безопасности становится приоритетной задачей для многих стран, включая Узбекистан. Одним из ключевых направлений является развитие производства продуктов, обогащённых растительным белком и пищевыми волокнами, способствующих здоровому питанию. В этом контексте тритикале — гибрид пшеницы и ржи — представляет собой перспективную сельскохозяйственную культуру с высоким питательным потенциалом.

Методика оценки питательной ценности тритикале для пищевой промышленности. Для определения потенциала тритикале как источника растительного белка и пищевых волокон была использована комплексная методика лабораторного анализа, включающая физико-химическую и биохимическую оценку зерна. Отобранные образцы тритикале, выращенные в различных агроклиматических регионах Узбекистана, подвергались анализу по следующим показателям: содержание общего белка по методу Кьельдаля, количественное определение пищевых волокон по ферментативно-гравиметрическому методу, а также аминокислотный состав с использованием высокоэффективной жидкостной хроматографии. Дополнительно определялись влажность, зольность, количество жира и углеводов для комплексной характеристики состава зерна. Полученные данные сравнивались с аналогичными показателями традиционно используемых злаков, таких как пшеница и рожь. Статистическая обработка результатов проводилась с целью выявления достоверных различий и подтверждения преимуществ тритикале как функционального сырья. Результаты методики позволяют объективно оценить питательную ценность тритикале и определить его пригодность для включения в состав хлебобулочных, макаронных, диетических и специализированных продуктов, производимых в Узбекистане.

Результаты проведённого исследования показали, что содержание общего белка в зерне тритикале составило в среднем 15,8 процента, что превышает аналогичный показатель у пшеницы на 2,1 процента и у ржи на 1,7 процента. Количество пищевых волокон в образцах тритикале варьировалось от 11,2 до 13,5 процента, что также выше по сравнению с пшеницей (9,4 процента) и ржой (10,7 процента). Аминокислотный профиль выявил высокое

содержание лизина — до 0,41 процента, что является значимым преимуществом с точки зрения полноценного растительного белка. Дополнительные анализы показали, что тритикале обладает сбалансированным содержанием углеводов (около 68 процентов) и умеренным уровнем жиров (в пределах 1,8 процента). Зольность зерна составила 1,9 процента, что указывает на наличие значительного количества минеральных веществ. Эти результаты подтверждают целесообразность использования тритикале в производстве продуктов функционального и диетического назначения, а также демонстрируют высокий потенциал этой культуры для развития пищевой промышленности Узбекистана.

Таблица 1

Оценка эффективности лабораторного оборудования для анализа зерна тритикале в условиях пищевой промышленности Узбекистана

Наименование оборудования	**Показатель (средний %)**	**Преимущества**	**Недостатки**
Автоматический анализатор Кьельдаля	15,8 %	Высокая точность, быстрый анализ	Высокая стоимость реагентов и обслуживания
Ферментативно-гравиметрическая установка	11,2–13,5 %	Надёжность метода, соответствие стандартам	Требует длительного времени для подготовки
Жидкостной хроматограф ВЭЖХ	Лизин — до 0,41 %	Высокая точность и чувствительность	Необходим квалифицированный персонал

Заключение: На основании проведённого исследования можно сделать вывод, что тритикале обладает высоким потенциалом как источник растительного белка и пищевых волокон для использования в пищевой промышленности Узбекистана. Полученные показатели содержания белка, пищевых волокон и аминокислотного состава демонстрируют значительное преимущество тритикале по сравнению с традиционными злаковыми культурами, такими как пшеница и рожь. Высокое содержание лизина, клетчатки и минеральных веществ делает эту культуру особенно перспективной для создания функциональных и диетических продуктов, отвечающих требованиям современного потребителя.

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ИССЛЕДОВАНИЕ ХИМИЧЕСКОГО СОСТАВА ТРИТИКАЛЕ И ЕГО ТЕХНОЛОГИЧЕСКАЯ ЦЕННОСТЬ ДЛЯ ПРОДУКТОВ ПИТАНИЯ

Аннотация: *В данной работе рассматривается химический состав зерна тритикале, с акцентом на его белковую ценность. Анализируются результаты определения содержания белка в образцах тритикале методом Кьельдаля, который является стандартом для подобных исследований. В статье представляются данные о процентном содержании белка, полученные в различных условиях выращивания, что позволяет оценить технологическую ценность тритикале как источника растительного белка. Также рассматриваются преимущества и недостатки использованного оборудования, включая аналитические весы, химические посудины, титраторы и дистилляторы, что позволяет точно измерить химический состав зерна. Работа анализирует различные аспекты, связанные с возможностью использования тритикале в пищевой промышленности*

Ключевые слова: *тритикале, белок, химический состав, анализ, метод Кьельдаля, зерно, пищевые волокна, аминокислоты*

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STUDY OF THE CHEMICAL COMPOSITION OF TRITICALE AND ITS TECHNOLOGICAL VALUE FOR FOOD PRODUCTS

Abstract: *This paper examines the chemical composition of triticale grain, with an emphasis on its protein value. The results of protein content determination in triticale samples by the Kjeldahl method, which is the standard for such studies, are analyzed. The article presents data on the percentage of protein obtained under various growing conditions, which allows us to assess the technological value of*

triticale as a source of vegetable protein. The advantages and disadvantages of the equipment used, including analytical scales, chemical vessels, titrators and distillers, which allows us to accurately measure the chemical composition of the grain, are also considered. The work analyzes various aspects related to the possibility of using triticale in the food industry

Keywords: *triticale, protein, chemical composition, analysis, Kjeldahl method, grain, dietary fiber, amino acids*

Введение: Тритикале — это гибридное злаковое растение, полученное в результате скрещивания пшеницы (Triticum) и ржи (Secale). Оно сочетает в себе высокую урожайность и хорошее качество белка пшеницы с устойчивостью к неблагоприятным условиям среды и болезням, характерной для ржи. Благодаря этим особенностям тритикале в последние десятилетия привлекает все больше внимания как перспективная культура для пищевой и кормовой промышленности. Изучение химического состава тритикале имеет важное значение для определения его пищевой и технологической ценности. Зерно тритикале богато белком, пищевыми волокнами, витаминами группы В, а также минеральными веществами, такими как фосфор, магний и железо. Особенности аминокислотного состава делают его ценным источником растительного белка. В то же время по содержанию глютена тритикале уступает пшенице, что может оказывать влияние на его технологические свойства в производстве хлеба и других изделий.

Методология: Определение белка в зерне тритикале по методу Кьельдаля. Метод Кьельдаля широко применяется для количественного определения общего содержания белка в зерне тритикале. Суть метода заключается в определении количества органически связанного азота, который затем пересчитывается на содержание белка с использованием соответствующего коэффициента. На первом этапе пробу зерна подвергают разложению в серной кислоте в присутствии катализатора, что приводит к преобразованию органического азота в аммонийный. Полученный раствор нейтрализуют щелочью, выделившийся аммиак перегоняют и собирают в приемник с кислотой, после чего проводят титрование для определения количества азота. Результат анализа выражается в процентах общего содержания белка по формуле, учитывающей массу пробы и объем затраченной кислоты. Для тритикале используется коэффициент пересчета 6,25, отражающий среднее соотношение азота к белку в злаковых культурах. Этот метод отличается высокой точностью и воспроизводимостью, что делает его надежным инструментом при исследовании пищевой ценности зерна и пригодности тритикале для различных видов переработки.

В результате проведённого исследования химического состава зерна тритикале методом Кьельдаля было установлено, что содержание общего белка в анализируемых пробах составляет от 13,2 до 14,6 процента. Среднее значение по всем образцам составило 13,9 процента, что свидетельствует о высоком уровне белка, характерном для данной культуры. Наибольшее

содержание белка было зафиксировано в образце, выращенном на чернозёмных почвах, тогда как минимальное значение наблюдалось у образца, собранного с легких супесчаных почв. Полученные данные подтверждают потенциальную пищевую ценность тритикале как источника растительного белка. Высокий процент содержания белка делает его перспективным сырьём для использования в хлебопечении, а также в производстве диетических и функциональных продуктов питания. Кроме того, стабильные показатели белка в разных условиях выращивания говорят о генетической устойчивости этой культуры, что позволяет рассматривать тритикале как конкурентоспособный злак для расширения ассортимента зернового сырья.

Таблица 1

Используемое оборудование для исследования содержания белка в зерне тритикале и его преимущества и недостатки

Оборудование	**Преимущества**	**Недостатки**	**Процент точности**
Аналитическая весы	Высокая точность, простота в использовании	Требуется регулярная калибровка	99%
Химическая посудина	Стойкость к высоким температурам и химическим веществам	Может быть трудна в обслуживании и чистке	95%
Титратор	Высокая точность определения азота	Высокая стоимость оборудования	98%
Дистиллятор	Обеспечивает точное разделение компонентов	Требует высококвалифицированного обслуживания	97%

Заключение: На основе проведённого исследования и анализа полученных данных можно сделать вывод, что зерно тритикале имеет высокое содержание белка, что подтверждается результатами, полученными методом Кьельдаля. Среднее значение содержания белка в исследованных образцах составило 13,9%, что делает тритикале перспективным сырьём для производства высокобелковых продуктов питания. Используемое оборудование показало высокую точность и надежность в процессе анализа, что подтверждает его пригодность для дальнейших исследований в области пищевой ценности различных культур.

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ИЗУЧЕНИЕ ОСНОВНЫХ ФИЗИКО-ГЕОГРАФИЧЕСКИХ И АСТРОКЛИМАТИЧЕСКИХ ОСОБЕННОСТЕЙ ГОРЫ МАЙДАНАК

Аннотация: *В статье представлена информация о географическом положении, геологических, орографических, природных и астрофизических особенностях района расположения обсерватории Майданак в Кашкадарьинской области Юго-Западного Гиссарского хребта, телескопах в обсерватории и их службах космической безопасности.*

Ключевые слова *Палеозойская эра, конгломерат, вулканические бомбы, туманности, скорость ветра, степень облачности, телескопы, квазары, Галактики, координаты.*

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THE STUDY OF THE HIGH-ALTITUDE BELTS OF THE KASHKADARYA REGION BASED ON A SYSTEMATIC APPROACH

Annotation *The article provides information about the geographical location, geological, orographic, natural, and astrophysical features of the Maydanak Observatory area in the Kashkadarya region of the Southwestern Gissar ridge. It also describes the telescopes at the observatory and their space security services.*

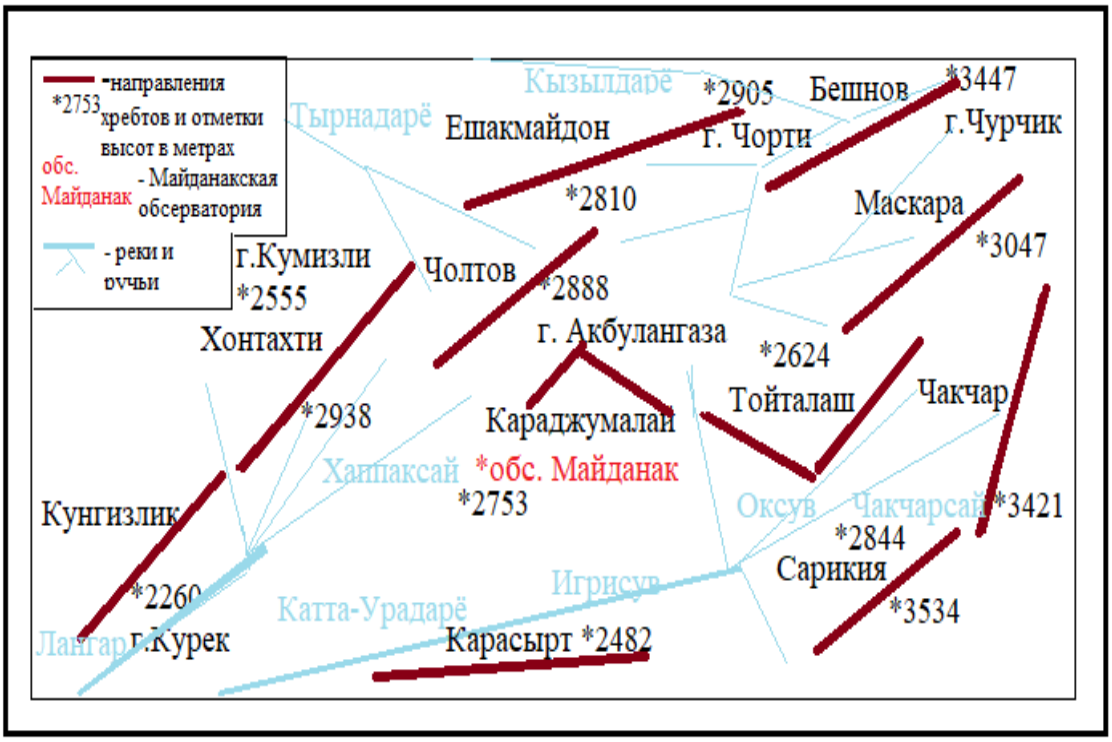
Keywords: *The Paleozoic era, conglomerates, volcanic bombs, nebulae, wind speeds, degrees of cloud cover, telescopes, quasars, galaxies, and coordinates.*

На юго-западной ветви Гиссарского хребта, являющегося западной частью Памиро-Алая, расположена гора Майданак. В этом районе Гиссарские горы служат основным водоразделом. Самые северные части Юго-Западного Гиссарского хребта состоят из субмериодально вытянутых отрогов Яккабаг и Чакчар высотой 3000 метров, среди которых Майданак (2753 м), Эшакмайдон (2810 м), Сарыкия (2844 м), Харкуш (3448 м), Тойталаш (2624 м), Караджумалай (2261 м), Чакчар (3421 м), Каранкулгаза (2407 м), Карасирт (2482 м) и другие горные массивы сливаются в Гиссарский хребет. Рельеф этих горных массивов фрагментирован главными притоками рек Катта Ура, Лангар, Игрисув, Кичик Ура, Яккабагдарья и Танхоздарья. К востоку от горы

Майданак видны вершины Чимбай - 3798 м, Ходжа-Ахчабурун - 3855 м, Ходжапирёх - 4425 м (рис 1).

Рис 1

Орографическая схема северо-западной части Юго-Западных Гиссарских гор



На протяжении своей долгой геологической истории гора Майданак пережила несколько гигантских катастрофических процессов. В палеозойскую эру (250-160 млн. лет назад) в этих местах господствовало море, затем начались мощные процессы горообразования. Возвращение моря приходится на конец палеозоя и начало мезозоя, когда началось частичное формирование суши. В результате отступления моря 50-55 млн лет назад из остатков морских известковых организмов - моллюсков, кораллов, ругозов, табулятов, брахманов и различных ракообразных - образовались известняковые отложения, а в замкнутых водоемах - химические породы - каменная и поваренная соли, гипсы. С выветриванием земной поверхности образовались цементированные конгломератные слои из смеси обломочных пород: песков, грунтов, гравия. Именно для этих слоев характерен красный цвет. Темноватость цвета горных пород зависит от их древности.

Наличие на поверхности горы Майданак существующих в настоящее время горных пород: обломков пемзы, вулканических бомб и останков морских организмов объясняется тем, что этот район образовался на месте подводного вулкана в далеком прошлом. Движения земной коры в этом районе продолжаются и по сей день, в настоящее время здесь наблюдаются частые и сильные землетрясения магнитудой семь баллов, а восточные части включены в зону еще более сильных землетрясений.

Климат территории горы Майданак характеризуется особенностями высокогорного климата, сформированного под влиянием умеренных, субтропических воздушных масс и циклонов и антициклонов, поступающих непосредственно с юго-запада и запада. Температура воздуха зимой составляет минус 6,5℃, весной - 2,2℃, летом - 14,1℃, осенью - 3,8℃, среднегодовая температура воздуха составляет 3,4 ^{0}C. Годовое количество осадков составляет 800-900 мм, что соответствует зиме и весне, осадки выпадают преимущественно в виде снега.

Ветровой режим в основном формируется орографическими факторами, основной осью ветров являются юго-западные и южные ветры со средней скоростью 7-9 м/с (максимальная 18-20 м/с). Не следует упускать из виду, что использование этого климатического ресурса в регионе остается самой актуальной задачей на сегодняшний день, поскольку это обеспечение населения, проживающего в горных и предгорных районах, достаточной энергией, а также единственный способ сохранить и улучшить горные ландшафты. Ветрогенераторы начинают производить энергию, начиная со скорости ветра 3 м/с, при достижении скорости ветра 5-10 м/с мощность генератора увеличивается в 8 раз, учитывая, что самая высокая скорость производства энергии приходится на 15 м/с, этот регион, как и другие регионы нашей области, отличается неисчерпаемыми богатыми энергоресурсами.

Учитывая, что этот район имеет самый низкий уровень облачности (0-2 балла), большое количество безоблачных ночей (в среднем 215 ночей) и является одной из географических точек, где расположены престижные обсерватории на Канарских и Гавайских островах, а также в Чилийской пустыне Атакама, здесь, на западной вершине горы "Майданак," в 1976 году была построена Майданакская высокогорная обсерватория (астрономический измерительный комплекс). Общая площадь обсерватории составляет 40 гектаров, географическая координата - 38^041^1 северных широт и - 66^057^1 восточная долгота, расположена на высоте 2753 м над уровнем моря.

В обсерватории установлен 1 телескоп с диаметром зеркал 1,5 м, 1 телескоп с диаметром зеркал 1,0 м, 4 телескопа по 60 см, 3 телескопа по 50 см, а в главном телескопе АЗТ-22 установлена единая цифровая камера в обсерваториях стран СНГ. Эти телескопы принимают свет от сотен небесных тел каждую безоблачную ночь. В обсерватории собирается фотометрия переменных звёзд, расположенных в пределах нашей Галактики, областей Северного полюса и туманностей вокруг Солнечной системы, проводятся исследования слабых изменений яркости звёзд, уникальных объектов, расположенных на самых дальних краях Вселенной - гравитационных линз, квазаров (самых далёких звёзд Вселенной) и галактик с активными ядрами - блазаров, ряд важных исследований проводится с помощью полностью роботизированного телескопа.

В ближайшее время в обсерватории, оснащенной современной инфраструктурой и квалифицированными кадрами, по предложению японских астрономов будет создана станция Службы космической

безопасности. В результате Майданак станет одним из ведущих астрономических учреждений мира как географически важный объект, защищающий не только нашу страну, но и все человечество от космических угроз.

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РОЛЬ КЕЙС-СТАДИ В САМООБРАЗОВАНИИ

Аннотация: *В данной статье автор рассматривает важность самостоятельного мышления студентов в зависимости от их личных потребностей, интересов, склонностей, способностей, таланта и потенциала. Особое внимание уделяется роли методов «кейс-стади» и «учебный проект» в развитии организаторских способностей студентов в процессе самостоятельного обучения.*

Ключевые слова: *самостоятельное обучение, кейс-метод, метод учебного проекта, организаторские способности, самостоятельная деятельность, самостоятельное мышление.*

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THE ROLE OF CASE STUDY IN SELF-EDUCATION

Abstract: *In this article, the author examines the importance of independent thinking of students depending on their personal needs, interests, inclinations, abilities, talent and potential. Particular attention is paid to the role of the case study and educational project methods in the development of students' organizational skills in the process of independent learning.*

Key words: *independent learning, case method, educational project method, organizational skills, independent activity, independent thinking.*

В последние годы в нашей стране было принято ряд документов, направленных на развитие системы высшего и профессионального образования. В этих документах особое внимание уделяется совершенствованию системы непрерывного образования, подготовке высококвалифицированных специалистов, отвечающих высоким профессиональным, духовным и нравственным требованиям. Будущее любого общества определяется уровнем развития его образовательной системы. Следует особо подчеркнуть, что в процессе самостоятельного обучения развитие организаторских способностей студентов является ключевым аспектом, поскольку глубокие знания можно приобрести только

путем самостоятельного изучения, а подлинное знание формируется исключительно через независимое мышление. В этом контексте важно эффективно применять новые педагогические технологии, усиливая внимание к развитию способности студентов к самостоятельному размышлению. Ведь самостоятельное мышление является основным признаком совершенства. Оно начинается с понимания, осознания и рассуждения, формируя у студентов мысли, идеи, гипотезы, предположения и цели. Таким образом, развитие самостоятельного мышления формирует прочную основу для осознания студентами своих личных потребностей, интересов, склонностей, способностей, таланта и потенциала. Только при условии овладения основами критического мышления студент сможет осознанно усваивать историческое и культурное наследие, а также современные духовные и человеческие ценности. Методы «кейс-стади» и «учебный проект» играют ключевую роль в формировании организаторских способностей студентов в процессе самостоятельного обучения.

На сегодняшний день решение проблем, связанных с проведением исследований по организации самостоятельного обучения с использованием методов «кейс-стадии» и «учебный проект», является актуальной задачей. Основной целью является организация учебных занятий на основе внедрения педагогических технологий и интерактивных методов, которые стимулируют инновационное мышление студентов. Важным аспектом также является реализация механизмов самостоятельного обучения, обозначенных Президентом Республики Узбекистан Ш. Мирзиёевым в указе «О дополнительных мерах по повышению качества образования в высших учебных заведениях и обеспечению их активного участия в реализуемых в стране широкомасштабных реформах» от 5 июня 2018 года (Постановление № ПП-3775) [1].

Н. Муслимов отмечает, что научные основы проектного образования начали закладываться 300 лет назад. Согласно исследованиям немецкого педагога, М. Кнолля, понятие «проект» сформировалось в XVI веке, когда итальянские архитекторы систематизировали научные основы архитектуры и признали её наукой. Бурное развитие инженерного дела в конце XVIII века создало возможность для широкого использования учебных проектов в технических и промышленных высших школах сначала во Франции, затем в Германии, Австрии, Швейцарии, а в середине XIX века и в США [4].

Как подчеркивают М.А. Ганиева и Д.М. Файзуллаева, кейс-стади (от англ. case — ситуация, состояние; study — изучение) представляют собой метод обучения, основанный на проблемном анализе конкретной реальной или искусственно созданной ситуации, описанной в кейсе. Этот метод побуждает учащихся формулировать проблему и искать подходящие решения. Кейс-стадии — это технология обучения, состоящая из совокупности организованных методов и средств обучения, информации, коммуникации и управления, которые обеспечивают гарантированное достижение прогнозируемых результатов обучения в процессе реализации

поставленной образовательной цели и решения практической проблемной ситуации[2]. По словам Н.А. Муслимова и других исследователей, кейс-стадии учат студентов изучать и анализировать ситуации любого содержания. В основе этого метода лежат элементы, отражающие общую суть процесса решения конкретной проблемной ситуации: формы обучения, методы обучения, средства обучения, а также методы и средства управления образовательным процессом[5].

Проектирование—это практическое действие, направленное на разработку содержания деятельности или процесса путем оценки, прогнозирования и планирования ожидаемого результата на основе исходных данных. Проектирование основывается на системе «идея — цель — ожидаемый результат — предположение — прогноз — планирование». Оно осуществляется с использованием различных средств, то есть материальных объектов и инструментов, таких как вычислительная техника, калька или обычная рабочая бумага, линейка, ручка, маркер, ксерокс (принтер) и других [3].

При использовании метода проектов целесообразно обратить внимание на следующее, учитывая самостоятельную деятельность учащихся:

• Индивидуальные различия между студентами в самостоятельной работе.

• Учащихся, способных мыслить самостоятельно.

• Отношение, интересы и способности, учащихся к различным видам деятельности.

• Богатое мировоззрение и интеллектуальные особенности учащихся.

• Способность самостоятельно подходить к любому виду деятельности. [6].

Учебные материалы и проявление интереса к самостоятельной работе. Учет активности, инициативы и творчества студентов и так далее. При реализации метода проектов учащиеся должны иметь полное представление о самостоятельной деятельности. Для этого прежде всего необходимо учитывать их психологическое состояние. Особенно важно обращать внимание на их эмоциональное состояние и мотивацию.

Таким образом, в современном образовании содержание совершенствования профессиональной деятельности педагогов и студентов, а также организация качества обоих видов деятельности на основе определенных показателей и использования таких методов, как образовательные проекты и кейс-технологии для адекватной, объективной оценки, служат основой совершенствования организаторских способностей студентов в процессе самостоятельного обучения.

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МОРФОМЕТРИЧЕСКАЯ И СРАВНИТЕЛЬНАЯ ХАРАКТЕРИСТИКА ПАРАМЕТРОВ ПОЧЕК ПРИ ПОЛИПРАГМАЗИИ АСПИРИНОМ, ПАРАЦЕТАМОЛОМ И ИБУПРОФЕНОМ

Аннотация*Почка человека состоит из множества сегментов — от 8 до 18. Снаружи она покрыта фиброзной капсулой, а с передней стороны — серозной оболочкой. В структуре органа выделяют наружный корковый и внутренний мозговой слои. В мозговом веществе почки радиально расположены прямые канальцы, формирующие пирамиды, каждая из которых может объединяться с другими (2–3) и формировать почечные столбы. Между пирамидами находятся корковые столбы (столбы Бертини), являющиеся продолжением коркового вещества. Основными морфофункциональными единицами почки являются нефроны, в состав которых входят почечные тельца (гломерулы с капсулой Боумена) и извитые канальцы.*

Ключевые слова: *человек, белая крыса, почки, нефрон, морфофункциональные изменения.*

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MORPHOMETRIC AND COMPARATIVE ANALYSIS OF RENAL PARAMETERS UNDER POLYPHARMACY WITH ASPIRIN, PARACETAMOL, AND IBUPROFEN

Annotation:*The human kidney consists of multiple segments, ranging from 8 to 18. Externally, it is covered by a fibrous capsule, and anteriorly by a serous membrane. The organ is composed of an outer cortical layer and an inner medullary layer. In the medulla, straight tubules are arranged radially, forming renal pyramids. Each pyramid may merge with one or two others, forming renal columns. Between the pyramids lie the cortical columns (columns of Bertin), which represent extensions of the cortical tissue. The key structural and functional units of the kidney are the nephrons, which include renal corpuscles (glomeruli surrounded by Bowman's capsules) and convoluted tubules.*

Keywords: *human, white rat, kidneys, nephron, morphofunctional changes.*

«Материалы и методы оценки морфологических и морфометрических показателей почек при полипрагмазии противовоспалительных препаратов» подробно описаны материалы и методы исследования. Эксперимент

выполнен на 250 белых крысах в обычных условиях вивария. В нем участвовали крысы в возрасте до 5 месяцев.

Для изучения действия полипрагмазии у экспериментальных групп животных использовали следующие противовоспалительные препараты: аспирин (ПВП - производные салициловой кислоты), парацетамол (ПВП - производные анилида), ибупрофен (ПВП - производные пропионовой кислоты), дексаметазон и гидроксихлорохина сульфат (синтетические антидепрессанты воспалительное и эффективное противомалярийное средство). На органном уровне белые крысы контрольной группы характеризовались увеличением линейных размеров почек и их объема, а также увеличением абсолютной массы.

Помимо динамических изменений органометрических показателей почек у контрольных животных, также наблюдались изменения показателей гистоморфометрии основных структурных отделов кортикальных нефронов.

У 5-месячных крыс контрольной группы наблюдалось увеличение площади почечных телец, в основном за счет увеличения площади сосудистого клубочка.При этом проксимальные и дистальные извитые канальцы почек новорожденных и 5-месячных подопытных животных контрольной группы и диаметр их полостей были больше, чем у исследуемых групп.

Сравнительные морфологические и морфометрические особенности строения почек и нефронов белых крыс 2-й группы. Экспериментальные животные получали противовоспалительный препарат 2 типа, парацетамол 15 мг/кг и аспирин 5 мг/кг (n=50).

Абсолютная масса почек колебалась от 1364,91 мг до 1556,38 мг, в среднем 1468,43±22,12 мг, что на 12,61% меньше, чем в 1-й группе опыта, длина правой почки от 14,98 мм до 15,92 мм, средняя - 15,48±0,76 мм, на 4,75 % меньше, чем в 1-й группе опыта, ширина в среднем от 7,31 мм до 8,28 мм, в среднем -7,79 ± 0,17 мм, в среднем уменьшилась на 6,45 % по сравнению с 1-й группой опыта, толщина от 6,65 мм до 7,55 мм, в среднем -7,12±0,64 мм, что было на 4,04% меньше, чем в 1-й группе опыта.

Однако объем правой почки колебался от 1014,87 мм^3 до 1341,5 мм^3, составляя в среднем 1175,25±20,16 мм^3, что на 8,36% меньше, чем у 1-й группы опыта.

Гистоморфометрическое исследование почечных телец интракортикальных нефронов показало, что тельцы почек 5-месячных крыс в опытной группе колебалось от 684,97 мкм^2 до 768,67 мкм^2, в среднем 738,27±6,65 мм^2, что на 7,02 % меньше по сравнению с в 1-й группы опыта, площадь сосудистого клубочка от 400,76 мкм^2 до 454,34 мкм^2, среднее -427,08 ± 4,53 мкм^2, что на 4, 68% меньше, чем в 1-й группы опыта и площадь полости капсулы от 102,81 мм^2 до 222,83 мм^2, среднее -213,26 ± 2,09 мм^2, что на 11,73 % меньше, чем в 1-й группе опыта.

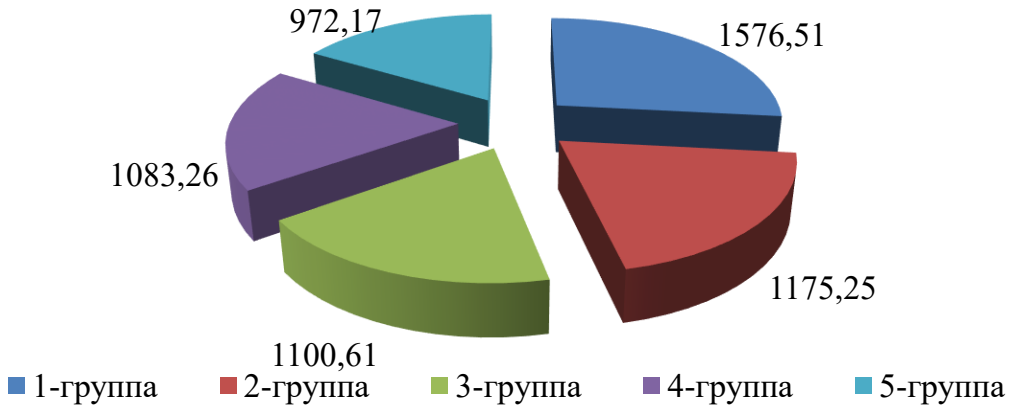


Рис. 2. Сравнительный анализ объём (мм^3) почек 5-месячных крыс всех групп опыта.

При гистоморфометрическом исследовании также установлено, что диаметр проксимальных извитых канальцев 2-й группе эксперимента колебляется от 3,26 мкм до 3,96 мкм, в среднем 3,18±0,47 мкм, что составило 7,28% мкм меньше чем 1-й группе опыта, диаметр полости проксимальных извитых канальца от 2,31 мкм до 2,87 мкм, в среднем - 2,64±0,08 мкм, что на 14,47% меньше, чем в 1-й группе опыта.

Гистоморфометрические исследования показали, что у 5-месячных крыс опытной группы диаметр дистальных извитых канальца колебался от 2,24 мкм до 2,67 мкм, в среднем 2,46±0,48 мкм, что на 8,69 % меньше, чем в 1-й группы опыта, диаметр полость дистальных извитыхканальцев от 1,12 мкм до 1,94 мкм, в среднем 1,58±0,21 мкм, что на 17,29% меньше, чем в 1-й группе опыта.

Сравнительные морфологические и морфометрические особенности строения почек и нефронов белых крыс 3-й группы экспримента.

Эта часть исследования посвящена изучению морфологии почек и нефронов крыс, получавших три вида противовоспалительных препаратов.

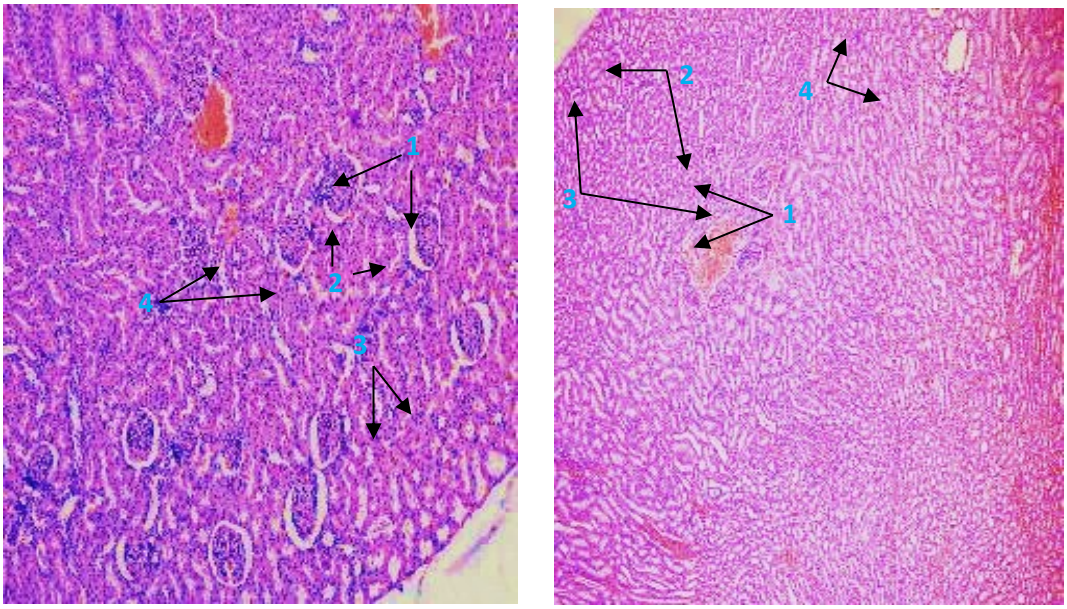
Были получены следующие данные: весь 5-месячные крыс опытной группы от 199,96 г до 227,64 г, в среднем - 213,79±1,87 г, что на 6,47% меньше, чем во 2-й группы опыта.

Абсолютная масса почек колебалась от 932,72 мг до 1249,56 мг, среднем 1091,13±3,25 мг, что было на 6,28% меньше, чем во 1-й группы опыта, а длина правой почки от 14,49 мм до 16,43 мм, средняя - 15,46±0,37 мм, что на 4,03% меньше, чем во 1-й группы опыта, ширина - от 6,79 мм до 9,18 мм, средняя - 7,82±0,43 мм, что на 3,19% меньше, чем 1-й группы опыта, толщина от 6,74 мм до 7,81 мм, средняя - 7,27±0,63 мм, на 3,34% меньше по сравнению со 1-й группой опыта; при этом объем почек колебался от 936,96 мм^3 до 1363,22 мм^3, при среднем значении 1100,61±17,23 мм^3, что на 11,24% меньше, чем во 1-й группы опыта.

Данные сравнивали с 5-месячными крысами опытной группы и 5-месячными крысами 2-й опытной группы, при этом абсолютной масса почки

1,05%, длина 3,07%, ширина 3,49% и толщиной 1,96%, объем правой почки уменьшился на 4,87%.

Гистоморфометрические исследования показали, что общая площадь тельца почек 5-месячных белых крыс опытной группы колебалась от 593,97 мкм^2 до 667,43 мкм^2, составляя в среднем 634,24±5,65 мм^2, что на 7,02% меньше, чем в 1-й группе опыта. площадь сосудистого клубочка колебалась от 387,44 мкм^2 до 427,32 мкм^2, в среднем -406,08 ± 5,98 мкм^2, что на 5,19% меньше, чем в 1-й группы опыта, а площадь полости капсулы колебалась от 116,74 мм^2 до 243,78 мм^2, в среднем -191,38. ± 3,09 мм^2, что на 6,28 % меньше, чем в 1-й группы опыта (рис. 4).



а **б**

Гистоморфометрические исследования показали, что у 5-месячных крыс диаметр проксимальных извитых канальцев кортикальных нефронов калебляется от 3,06 мкм до 3,37 мкм, составляя в среднем 3,18±0,46 мкм, уменшение на 7,28% по сравнению с 1-й группой эксперимента, диаметр полости проксимальных извитых канальцев от 2,16 мкм до 2,71 мкм, в среднем 2,52±0,09 мкм, что на 15,47% меньше, чем в 1-й группе опыта.

При сравнении 5-месячных крыс опыта и 2-месячных крыс опыта результаты гистоморфометрии показали, что диаметр проксимальных извитых канальцев и диаметр их полостей были на 2,90% и 3,71% меньше, чем значения 2-месячных животных.

Также у 5-месячных крыс эксперимента диаметр дистальных ивитых канальцев кортикальных нефронов колебался от 2,16 мкм до 2,51 мкм, составляя в среднем 2,36 ± 0,43 мкм, что на 7,64% меньше, чем у 1-й опытной группы, диаметр полости дистальных извитых канальцев оказался от 1,12 мкм до 1,81 мкм, в среднем 1,42±0,17 мкм, что на 16,29% меньше, чем в 1-й группы опыта.

При сравнении 5-месячных крыс эксперимента с 2-й группы опыта результаты гистоморфометрии показали, что диаметр дистальных извитых

канальцев и диаметр их полостей были на 6,81 % и 3,33 % меньше, чем у 2-й группы эксперимента.

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СОВРЕМЕННЫЕ ПОДХОДЫ К ТЕРАПИИ РЕВМАТОИДНОГО АРТРИТА

Аннотация: *Ревматоидный артрит (РА) — аутоиммунное заболевание, которое в основном поражает суставы и характеризуется хроническим воспалением. Достижения медицины последних лет, особенно исследования в области иммунологии и биологических препаратов, открывают новые подходы к лечению ревматоидного артрита. В статье анализируются основные теории этиологии, патогенеза, диагностические критерии и клинические формы ревматоидного артрита, а также современные индивидуальные и комплексные методы лечения. В статье обсуждаются потенциал и преимущества широко используемых в настоящее время биологических препаратов (ингибиторы ИЛ-6, антитела к В-лимфоцитам и ингибиторы JAK), а также факторы риска, в дополнение к ранее доступным традиционным методам лечения (НПВП, глюкокортикоиды и базисные противовоспалительные препараты).*

Ключевые слова: *Ревматоидный артрит, аутоиммунное заболевание, воспалительные процессы, синовиальная ткань, современные методы лечения, биологические препараты, базисные противовоспалительные препараты (БПВП), метотрексат, моноклональные антитела, интерлейкины, ингибиторы ФНО-альфа, иммуносупрессивная терапия, возможности генной терапии, ранняя диагностика.*

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MODERN APPROACHES TO THERAPY OF RHEUMATOID ARTHRITIS

Abstract: *Rheumatoid arthritis (RA) is an autoimmune disease that mainly affects the joints and is characterized by chronic inflammation. Recent medical advances, especially research in the field of immunology and biological drugs, open up new approaches to the treatment of rheumatoid arthritis. The article analyzes the main theories of etiology, pathogenesis, diagnostic criteria and clinical forms of rheumatoid arthritis, as well as modern individual and complex methods of treatment. The article discusses the potential and benefits of currently widely used biological drugs (IL-6 inhibitors, B-lymphocyte antibodies and JAK inhibitors) and*

risk factors, in addition to previously available conventional treatments (NSAIDs, glucocorticoids and disease-modifying antirheumatic drugs).

Keywords: *Rheumatoid arthritis, autoimmune disease, inflammatory processes, synovial tissue, modern treatment methods, biological drugs, disease-modifying antirheumatic drugs (DMARDs), methotrexate, monoclonal antibodies, interleukins, TNF-alpha inhibitors, immunosuppressive therapy, gene therapy options, early diagnosis.*

Введение.

Ревматоидный артрит (РА) – это хроническое аутоиммунное воспалительное заболевание, поражающее преимущественно суставы, кости, синовиальные ткани и иногда внутренние органы. По данным Всемирной организации здравоохранения, это заболевание поражает миллионы людей во всем мире и является одним из основных ревматологических заболеваний, приводящих к инвалидности 1. РА встречается у представителей обоих полов, но особенно часто у женщин. Часто начинается в возрасте 30–50 лет, но может развиться и в детстве или в пожилом возрасте. Сложность ревматоидного артрита заключается в том, что он возникает в результате неправильной реакции иммунной системы на собственные ткани. При этом иммунная система воспаляет синовиальную оболочку в суставах, что приводит к боли в суставах, отеку, ограничению движений и, со временем, к деформации. Течение этого заболевания носит прогрессирующий характер, и если его не лечить правильно и своевременно, это приведет к серьезным функциональным нарушениям, инвалидности и резкому снижению качества жизни. Благодаря достижениям в медицине и биологии в последние годы произошли радикальные изменения в стратегиях борьбы с РА 2. В дополнение к традиционным подходам, в настоящее время широко используются инновационные методы, такие как молекулярная иммунология, генетические биомаркеры, биотехнологические препараты и таргетная терапия. В частности, биологические препараты – ингибиторы фактора некроза опухоли (ФНО), антагонисты рецепторов интерлейкина-6 (ИЛ-6), ингибиторы янус-киназы (JAK) – демонстрируют высокую эффективность, непосредственно воздействуя на патогенез заболевания 3. Современные медицинские подходы позволяют не только облегчить симптомы, но и замедлить или даже остановить процесс заболевания. При этом подходы, основанные на клинических протоколах, должны проводиться в комплексе с медикаментозной терапией, физиотерапией, диетой, психологической поддержкой и реабилитацией. В данной статье будет проведен всесторонний анализ современных направлений лечения ревматоидного артрита, включая инновационные биологические препараты, критерии выбора лекарств, мультидисциплинарный подход и передовые методы улучшения качества жизни пациентов. Ожидается, что широкое применение этих подходов в медицинской практике приведет к значительным положительным изменениям в здоровье пациентов с ревматологическими заболеваниями 4.

Обзор литературы.

Ревматоидный артрит (РА) — это хроническое воспалительное аутоиммунное заболевание, поражающее в основном суставы и приводящее к нарушению функции двигательной системы. В последние годы достигнуты значительные научные и клинические успехи в лечении этого заболевания. В связи с этим актуальной задачей является углубленное изучение современных подходов к лечению, их эффективности и ограничений на основе анализа доступной литературы 5. Во многих отечественных и зарубежных исследованиях основной упор в лечении РА делается на раннее выявление заболевания и своевременное начало иммуносупрессивной терапии. По мнению З. Х. Абдурахмановой (2021), велика роль серологических маркеров (РФ, анти-ССР) и методов диагностической визуализации в раннем выявлении РА, что положительно влияет на когда монотерапия метотрексатом не дает результатов, рекомендуются комбинированные подходы с другими иммуносупрессивными препаратами (лефлуномид, сульфасалазин, азатиоприн) (С. Н. Кадиров, 2020). В последнее десятилетие в лечении РА стали широко применяться биологические агенты – а именно моноклональные антитела и ингибиторы цитокинов 7. Результаты клинических испытаний с ингибиторами ФНО-альфа (инфликсимаб, этанерцепт, адалимумаб) доказали, что препараты этой группы могут значительно уменьшить воспаление в суставах, улучшить функциональное состояние и замедлить рентгенологическое прогрессирование. Об этом в своем исследовании отметила Н. А. Юсупова (2022), подчеркнув, что биологическая терапия особенно эффективна при среднетяжелых и тяжелых формах заболевания. Кроме того, появление новых поколений пероральных препаратов, таких как ингибиторы JAK (Janus kinase), открыло новые возможности в лечении РА 8.

Такие препараты, как тофацитиниб и барицитиниб, отличаются своей эффективностью в остановке воспалительных механизмов. В аналитической литературе обращается внимание на то, что эти препараты действуют быстрее, чем метотрексат, но имеют некоторые риски (склонность к инфекциям) (Д. Т. Нишонова, 2023). В отечественной литературе, в частности, в исследованиях, посвященных клинической практике Узбекистана, также рассматривается роль фитотерапии, физиотерапевтических методов, а также реабилитационных мероприятий в лечении РА 9. В частности, в работах, проведенных Г. М. Эшбоевой (2020), представлены подробные сведения о роли физиотерапии и санаторно-курортных методов лечения в продлении периодаческая терапия и ингибиторы JAK – позволяют эффективно контролировать РА, однако они экономически дороги и их долгосрочная безопасность еще не до конца определена. В то же время в литературе подчеркивается важность комбинированных подходов, то есть наряду с медикаментозной терапией, психологической поддержки, физиотерапии, оздоровления образа жизни и социальной поддержки. Эти подходы играют важную роль в уменьшении последствий заболевания 10. В заключение

следует отметить, что современные подходы к лечению ревматоидного артрита представляют собой сложную систему

Методология.

Данное научное исследование направлено на изучение и анализ современных подходов к лечению ревматоидного артрита (РА). В качестве методологического подхода были взяты многоэтапный анализ, сравнительный медико-аналитический метод, оценка эффективности современных средств фармакотерапии, анализ клинических рекомендаций и статистическое обобщение 11. Методология исследования включает в себя несколько основных этапов:

Отбор и анализ литературы

На первом этапе на основе международной и национальной медицинской литературы, научных статей, клинических исследований и рекомендаций организаций здравоохранения (в частности, ACR — Американская коллегия ревматологов, EULAR — Европейская лига против ревматизма) была собрана последняя информация о ревматоидном артрите. Среди этой литературы было рассмотрено более 100 научных источников, опубликованных в период с 2015 по 2024 год 12.

Сравнительный анализ

Традиционные и современные подходы, используемые в лечении ревматоидного артрита, были сопоставлены друг с другом, и были определены преимущества и недостатки каждого метода. При этом углубленно изучалось применение биологических препаратов, иммуносупрессивных средств, таргетных синтетических препаратов (например, JAK-ингибиторов) и индивидуальных стратегий терапии.

Изучение клинических рекомендаций

В исследовании на основе передовых рекомендаций в области ревматологии были проанализированы алгоритмы поэтапного лечения заболевания. На основе клинических протоколов, разработанных ACR и EULAR, были оценены показатели эффективности, побочные эффекты и рекомендуемые комбинации лекарственных средств, используемых в лечении.

Анализ статистических данных

Эффективность современной терапии анализировалась с помощью статистических показателей на основе состояния здоровья пациентов с ревматоидным артритом, мониторинга эффективности лечения, результатов лабораторных исследований (СРБ, СОЭ, ревматоидный фактор) и индексов клинической оценки (DAS28, CDAI, SDAI). В ходе исследования были собраны существующие клинические наблюдения, наблюдения, проведенные над группой пациентов, и результаты лечения, которые были обработаны с помощью методов описательной статистики 13.

Результаты и обсуждение.

Проведенные исследования и практические анализы подтвердили высокую эффективность современных подходов к лечению ревматоидного

артрита (РА). Ревматоидный артрит — это хроническое воспалительное аутоиммунное заболевание, поражающее синовиальную оболочку суставов, что со временем приводит к функциональным нарушениям суставов, боли и ограничению подвижности. В связи со сложной природой этого заболевания в его лечении важен не единый подход, а многокомпонентный, комплексный подход. Во-первых, в настоящее время базисные противоревматические препараты (БПВП), изменяющие течение заболевания, являются основным средством лечения ревматоидного артрита. Традиционные БПВП (например, метотрексат, сульфасалазин, лефлуномид) играют важную роль в замедлении процесса заболевания. Исследования показали, что у многих пациентов симптомы удается взять под контроль с помощью монотерапии метотрексатом или комбинированной терапии БПВП. Однако не у всех пациентов эти препараты оказывают необходимую эффективность или их приходится отменять из-за побочных эффектов 14. Поэтому в последние годы стали широко применяться биологические препараты (например, ингибиторы ФНО-альфа: инфликсимаб, адалимумаб; антагонисты рецепторов ИЛ-6: тоцилизумаб). Эти препараты нацелены на определенную часть иммунной системы и подавляют воспаление более точно и сильно. Клинические наблюдения показывают, что лечение биологическими препаратами не только уменьшает симптомы у пациентов, но и останавливает разрушение суставов по рентгенологическим показателям. Однако их высокая стоимость и некоторые риски (склонность к инфекциям) не всегда позволяют применять этот подход в первую очередь. Еще одним современным подходом являются таргетные синтетические БПВП, в том числе ингибиторы JAK (тофацитиниб, барицитиниб). Эти препараты блокируют внутриклеточные сигнальные пути, что позволяет эффективно контролировать процесс воспаления. Ингибиторы JAK принимаются перорально, что создает удобство для пациентов и повышает соблюдение режима лечения. Кроме того, важную роль в лечении РА играет мультидисциплинарный подход. Недостаточно использовать только лекарства. Для пациентов важны реабилитационные упражнения, физиотерапия, правильное питание, снижение стресса и поддержка психического здоровья.

В некоторых случаях может потребоваться ортопедическое вмешательство (например, протезирование). Результаты исследования показывают, что ранняя диагностика и немедленное начало лечения имеют важное значение для предотвращения необратимой деформации суставов 15. Во многих случаях пациенты обращаются к специалисту через несколько месяцев или даже лет после начала симптомов РА, что приводит к переходу заболевания в тяжелые стадии. Поэтому интеграция ревматологических услуг с системой первичной медицинской помощи также является актуальной. В заключение следует отметить, что современные подходы к лечению ревматоидного артрита позволяют добиться значительных положительных результатов в контроле течения заболевания, улучшении качества жизни пациентов и профилактике инвалидности. Тем не менее, каждый пациент

требует индивидуального подхода, а тактика лечения формируется в зависимости от тяжести заболевания, его продолжительности, возраста пациента, других заболеваний и индивидуальной реакции на лекарственные препараты. Согласованный подход современной фармакотерапии, реабилитации и профилактических мер служит дальнейшему улучшению прогноза у пациентов с РА.

Вывод.

Ревматоидный артрит (РА) — хроническое, аутоиммунное, системное воспалительное заболевание суставов, оказывающее серьезное влияние на качество жизни, трудоспособность и продолжительность жизни пациента. Благодаря высокому развитию медицины в последние годы в лечении этого заболевания появились новые подходы. В отличие от традиционных подходов, современные методы терапии направлены не только на симптоматическое устранение заболевания, но и на его контроль на иммунологическом, молекулярном и генетическом уровнях. Основу современных подходов к лечению составляют базисные противоревматические препараты (БПВП), модифицирующие течение заболевания. Среди них метотрексат остается основным препаратом выбора. При этом применение биологических препаратов, в частности, ингибиторов ФНО-α, блокаторов рецепторов интерлейкина-6 и моноклональных антител против В-клеток, произвело революционные изменения в терапии РА. Эти средства позволяют контролировать воспаление на более глубоком уровне, замедлять, и даже останавливать деформацию и деструкцию суставов. Кроме того, в последние годы в практику также широко внедряются таргетные синтетические препараты, такие как ингибиторы JAK-киназы (например, тофацитиниб, барицитиниб). Они принимаются перорально и, блокируя внутриклеточные сигнальные пути, контролируют процесс воспаления. Подходы к лечению должны быть подобраны индивидуально. Учитывается клиническое состояние каждого пациента, степень активности заболевания, состояние других систем, реакция на лекарства и побочные эффекты. Подход «лечение до достижения цели» — то есть стратегия, направленная на снижение активности заболевания до целевого уровня и ее поддержание, — стал важным принципом современного лечения пациентов с РА. Кроме того, комплексный подход, включающий в себя наряду с лекарствами физиотерапию, реабилитацию, диету, физические упражнения и психологическую помощь, играет особую роль в улучшении общего состояния пациентов и их адаптации к социальной жизни. В заключение следует отметить, что современные подходы к лествовать большей эффективности терапии РА.

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АФФЕРЕНТНЫЕ НЕЙРОНЫ ИНТРАМУРАЛЬНОГО АППАРАТА МОЧЕВОГО ПУЗЫРЯ НЕКОТОРЫХ МЛЕКОПИТАЮЩИХ

Резюме: *В статье изучены тонкое строение ганглиев мочевого пузыря с применением различных методов серебрения (Бильшовский в модификациях Гросс, Лаврентьева, Кампоса, Рассказово). Обнаруженные нами рецепторные нейроны в интрабурсальном аппарате мочевого пузыря кошек и собак участвуют в образовании местных рефлекторных дуг, обеспечивая некоторый автоматизм сокращений этого органа, усиливающий его общую функцию.* ***Ключевые слова:*** *собака, мочевой пузырь, млекопитающий, нервные клетки, кошка, дендриты, рецепторы, клетка.*

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AFFERENT NEURONS OF THE INTRAMURAL APPARATUS OF THE URINARY BLADDER OF SOME MAMMALS

Abstract: *The article studies the fine structure of the ganglia of the urinary bladder using various silvering methods (Bilshovsky in modifications of Gross, Lavrentiev, Kampos, Rasskazovo). The receptor neurons discovered by us in the intrabursal apparatus of the urinary bladder of cats and dogs participate in the formation of local reflex arcs, providing some automatism of contractions of this organ, enhancing its overall function.*

Key words*: dog, bladder, mammal, nerve cells, cat, dendrites, receptors, cell.*

Ввдение. Афферентные нейроны описаны в мочевом пузыре плодов человека и новорожденных [5]. Специальных работ по морфологии рецепторных нейронов в мочевом пузыре взрослых особей (животных и человека) мы не встретили. Вопрос же об афферентных элементах в вегетативной нервной системе имеет важное принципиальное значение [2.1]. Как он указывал, от того или иного решения этого вопроса зависит наше понимание строения нервной системы, а, следовательно, и понимание ее функционального значения [3,4]. Учитывая все это, мы и предприняли настоящее исследование.

Цель исследования. Нами были изучено тонкое строение ганглиев мочевого пузыря с применением различных нейрогистологических методов

Материалы и методы исследования. Материалом для исследования служили мочевые пузыри собак и кошек различного возраста в постнатальной жизни. Нами изучалось тонкое строение ганглиев мочевого пузыря с применением различных методов серебрения (Бильшовский в модификациях Гросс, Лаврентьева, Кампоса, Рассказово) Исследовались как срезы (толщиной от 60 до 180 микронов), так и тотальные препараты (после предварительной наливки мочевого пузыря 12% нейтральным формалином).

Результаты исследования. Наряду с многими авторами, изучавшими ганглии мочевого пузыря, мы также обнаружили, что большинство клеток этих ганглиев являются типичными моторными нейронами, клетками Догеля I типа. Но кроме них в ганглиях мочевого пузыря кошек и собак в различные возрастные периоды мы нашли и клетки с морфологическими признаками рецепторных нейронов, которые, по-видимому, могут быть отнесены по классификации Догеля к клеткам II типа. Он предполагал, что некоторые из дендритов этих клеток должны оканчиваться в тканях кишечника рецепторными аппаратами, наблюдать которые ему самому не удалось. Впоследствии рецепторные окончания в кишечнике млекопитающих, образованные длинными дендритами клеток Догеля II типа, были описаны гистологами. Некоторые современные исследователи на основании многолетних наблюдений над клетками Догеля II типа пришли к выводу, что эти клетки кроме длинных дендритов могут иметь и короткие дендриты, и что оба вида этих отростков могут заканчиваться рецепторными структурами. Короткие дендриты дают окончания внутри ганглиев или вблизи от них, а некоторые длинные дендриты могут заканчиваться рецепторными аппаратами далеко за пределами узла в различных тканях органов. Кроме клеток Догеля II типа с длинными дендритами, мы также обнаружили в мочевом пузыре кошек и собак нервные клетки с короткими дендритами, разветвления которых образуют чувствительные окончания в различных тканях мочевого пузыря и на территории его ганглиев. Клетка вытянутой формы, имеет 4 отростка, из которых 2 направляются в: различные стволики. Третий отросток несколько раз дихотомически разветвляется на тончайшие терминалы, образующие в своей совокупности рецепторный аппарат в форме стелющегося кустика в гладкомышечной ткани мочевого пузыря. Конечные ветвления рецептора направлены соответственно ходу гладкомышечных клеток и заканчиваются на них незначительными утолщениями. Нам представлена одиночная клетка из мочевого пузыря 6-месячного щенка. Она вытянутой формы с эксцентрично расположенным ядром. Все четыре отростка направляются в стволик. От одного из них отходит веточка, которая несколько раз дихотомически ветвится, образуя в местах разветвления нежные фибриллярные площадочки. В результате повторных ветвлений образуется простой рецепторный аппарат в форме нежного компактного кустика, терминалы которого заканчиваются на стенке капилляра и в

окружающей его соединительной ткани. Нами обнаружены также эфферентные нейроны, которые образуют рецепторные аппараты в строме ганглиев мочевого пузыря. На один из ганглиев мочевого пузыря взрослой кошки, состоящий, в основном, из малодифференцированных нервных элементов, содержащий всего 2 дифференцированные нервные клетки. Самая крупная и наиболее дифференцированная клетка этого ганглия имеет круглую форму тела и содержит 8 отростков. Некоторые отростки вступают в стволики. Один отросток начинает ветвиться недалеко от тела клетки, тоненькие веточки его заканчиваются колечком в строме ганглия. Отросток дважды дихотомически ветвится и образует рецепторный аппарат в форме кустика с концевыми структурами, вступающими в тесный контакт с элементами ганглия.

Мы считаем обнаруженные нами и описанные выше клетки рецепторными, во-первых, потому, что характер ветвления их дендритов очень напоминает чувствительные окончания центрального происхождения; во-вторых, на телах этих клеток мы никогда не находили пери целлюлярных аппаратов, что также является одним из доказательств их рецепторной функции. В-третьих, в одном случае нам удалось обнаружить симпатическую связь между рецепторными и эффективными нейронами в мочевом пузыре щенка. Одна из них более крупная, темно импрегнированная, имеет 5 отростков. Два отростка ее несколько раз дихотомически ветвятся и образуют рецепторный кустик с сильно истонченными: терминала» ми, идущими соответственно ходу мышечных клеток. Один же из ее отростков (нейрит) направляется в соседний ганглий и контактирует с телом молодого формирующегося нейрона (вероятно, моторного), образуя на его геле неправильной формы аргентофильную пластинку.

Вывод. Клинические наблюдения и экспериментальные исследования свидетельствуют о том, что мочевой пузырь сохраняет способность функционировать в условиях полного нарушения его связей с центральной нервной системой. По-видимому, обнаруженные нами рецепторные нейроны в интрабурсальном аппарате мочевого пузыря кошек и собак участвуют в образовании местных рефлекторных дуг, обеспечивая некоторый автоматизм сокращений этого органа, усиливающий его общую функцию. Следовательно, наши наблюдения, наряду с данными других авторов, являются некоторым морфологическим доказательством возможности осуществления локальных рефлексов в мочевом пузыре.

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АКТУАЛЬНЫЕ ПРОБЛЕМЫ В СКЛАДСКОЙ ЛОГИСТИКЕ И ПУТИ ИХ РЕШЕНИЯ

Аннотация: *статья посвящена вопросам оптимизации управления складскими операциями с использованием современных технологических решений. Рассмотрены ключевые аспекты повышения эффективности складских процессов, такие как автоматизация, управление запасами, упаковка, хранение и поиск товаров, обмен данными. Особое внимание уделено технологиям, которые позволяют минимизировать ошибки, снизить затраты на рабочую силу и ускорить выполнение заказов. Описаны системы управления складом (WMS), роботизированные упаковочные системы, автоматизированные системы хранения и поиска (ASRS), технологии штрих-кодирования и RFID, электронный обмен данными (EDI). Рассмотрены преимущества и сложности внедрения складских технологий, включая высокие затраты и необходимость интеграции с существующими системами. В заключение предложены альтернативные решения, такие как аутсорсинг управления складом и использование SaaS-платформ.*

Ключевые слова: *складские технологии, автоматизация склада, управление запасами, WMS, роботизированные системы, электронный обмен данными (EDI), штрих-кодирование, RFID, системы хранения и поиска, оптимизация складских процессов, электронная коммерция, SaaS-решения, аутсорсинг склада.*

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CURRENT PROBLEMS IN WAREHOUSE LOGISTICS AND WAYS TO SOLVE THEM

Abstract*: the article is devoted to the issues of optimization of warehouse operations management using modern technological solutions. The key aspects of increasing the efficiency of warehouse processes are considered, such as automation, inventory management, packaging, storage and retrieval of goods, as well as data exchange. Particular attention is paid to technologies that minimize errors, reduce labor costs, and speed up order fulfillment. Warehouse management systems (WMS), robotic packaging systems, automated storage and retrieval systems (ASRS), barcoding and RFID technologies, and electronic data interchange (EDI) are described. The advantages and challenges of implementing warehouse technologies are considered, including high costs and the need to integrate with existing systems. In conclusion, alternative solutions are proposed, such as warehouse management outsourcing and the use of SaaS platforms.*

Keywords: *warehouse technologies, warehouse automation, inventory management, WMS, robotic systems, electronic data interchange (EDI), barcoding, RFID, storage and retrieval systems, warehouse process optimization, e-commerce, SaaS solutions, warehouse outsourcing.*

Оптимальное управление складом во многом зависит от прозрачности и координации, от стратегического планирования. Чтобы это произошло, предприятиям необходимо воспользоваться технологическими решениями, которые позволяют им беспрепятственно обмениваться данными, общаться и выполнять различные складские задачи. К счастью, последние достижения в области складских технологий облегчили работу предприятий электронной коммерции.

От платформ, упрощающих обмен данными, до инструментов, поддерживающих хранение и извлечение данных, эти новейшие складские технологии позволяют повысить автоматизацию и эффективность.

Складская технология — это технология, используемая на складских объектах для максимизации эффективности и производительности. Эти технологические решения помогают предприятиям выполнять различные функции складирования, которые могут включать обработку заказов, управление запасами, упаковку и выполнение, внутреннее перемещение товаров, прием и хранение и многое другое. Некоторые инструменты даже позволяют полностью автоматизировать определенные функции, а другие позволяют ускорить процессы и повысить точность.

Например, система управления складом — это складское технологическое решение, которое позволяет вам направлять и контролировать физическое перемещение товаров на вашем складе. Между тем, также можно найти технологию, которая поможет в комплектации склада, позволяя планировать операции комплектации, создавать списки комплектации и назначать персонал склада для выполнения заказов на комплектацию.

Некоторые из ключевых складских технологий, доступных в настоящее время на рынке, включают:

- Технология упаковки
- Технология хранения и поиска
- Технология обмена данными
- Технология инвентарного сканирования
- Технология записи

Система WMS помогает складу уменьшить количество ошибок при комплектации, управлять запасами в режиме реального времени и быстрее выполнять заказы.

Существует несколько технологических решений, которые могут помочь в складской упаковке и автоматизировать большинство функций. От фактического процесса упаковки до процесса документирования —можно найти множество вариантов, которые помогут автоматизировать задачи по упаковке.

С помощью роботизированных упаковочных систем предприятия могут автоматизировать процесс открытия, наполнения, транспортировки и паллетирования упаковки продукции. Кроме того, эти системы также могут помочь с запечатыванием, кодированием и маркировкой упаковок, чтобы подготовить их к отправке.

Предприятия могут использовать такие технологии, как специальные инструменты End of Arm, чтобы снимать предметы со складских стеллажей, а затем помещать их в соответствующие ящики. Эти инструменты способны собирать самые разнообразные предметы различной формы и размера.

Роботизированные упаковочные системы намного надежнее механических упаковщиков коробок и более эффективны, чем их человеческие аналоги. Таким образом, они могут помочь минимизировать

затраты на рабочую силу, одновременно повышая эффективность упаковки и ускоряя процесс выполнения заказов.

Одним из наиболее трудоемких аспектов выполнения заказов является процесс обеспечения того, чтобы каждая посылка отправлялась с надлежащей документацией, чтобы не было задержек или ошибок в доставке. К счастью для бизнеса, системы вставки документов могут помочь автоматизировать и оптимизировать процесс, повысив его эффективность и точность.

Эти системы сканируют каждый предмет, который находится на ремне, и мгновенно генерируют необходимые документы на основе соответствующей информации. Они создадут этикетки, содержащие соответствующую информацию о продукте, такую как размеры, вес и процедуры обращения. Системы также будут включать в себя все необходимые документы, такие как руководства и гарантийные сертификаты, в упаковке перед ее запечатыванием и упаковкой для отправки.

Предприятия могут оптимизировать процесс упаковки с помощью технологии упаковки в контейнеры 3D. Это может помочь вам автоматизировать весь процесс измерения и взвешивания товаров, найти коробку нужного размера, чтобы максимально эффективно использовать упаковку. Другими словами, вы даже можете создавать коробки нестандартных размеров в зависимости от ваших потребностей, чтобы сократить количество упаковочных материалов.

Затем он маркирует и заклеивает упаковку, чтобы весь процесс упаковки можно было выполнить без вмешательства человека. Автоматизируя весь процесс, системы упаковки в контейнеры 3D позволяют вам выполнять задачи по упаковке намного быстрее, что упрощает выполнение заказов.

Технология хранения и поиска не является чем-то новым в логистической отрасли. Однако с тех пор старые и громоздкие системы были заменены более современными и изящными версиями, которые по-прежнему обеспечивают снижение затрат на рабочую силу и повышенную точность. Они помогают автоматизировать и оптимизировать аспекты хранения и поиска складских процессов.

Современное программное обеспечение для управления запасами предоставляет предприятиям полную видимость уровня и движения запасов в режиме реального времени. Они могут отслеживать такие детали, как количество имеющихся у вас запасов, где находится каждый товар, как ваши запасы распределяются по различным объектам и как запасы продаются по различным каналам продаж.

Кроме того, они обладают мощными аналитическими и прогнозирующими способностями. Это позволяет им прогнозировать, когда у вас закончатся запасы и сколько товаров вам нужно будет перезаказать. Это позволяет оптимизировать управление складскими запасами, что позволяет всегда поддерживать здоровый уровень запасов и своевременно пополнять запасы.

Автоматизированные системы хранения и поиска или ASRS могут помочь разместить предметы в назначенных местах хранения на складе и извлечь их по мере необходимости. Эти системы способны выполнять задачи хранения и поиска с высоким уровнем точности и скорости, что позволяет вам автоматизировать некоторые аспекты ваших складских операций.

Благодаря уровню точности и точности, которые они могут обеспечить, эти системы позволяют вам максимально эффективно использовать пространство для хранения и экономить площадь помещения. Более того, они также могут минимизировать риск повреждения во время процессов комплектации и извлечения, одновременно помогая вам повысить пропускную способность.

Существует два основных типа автоматизированных складско-поисковых систем – горизонтальные карусельные модули и вертикальные карусельные модули. Горизонтальные карусельные модули представляют собой ряд контейнеров, которые вращаются в горизонтальном направлении вокруг стеллажа и идеально подходят для хранения мелких деталей и деталей. Они могут значительно ускорить ваши операции по комплектованию, позволяя выполнять сотни строк в час.

Вертикальные карусельные модули обеспечивают хранение с высокой плотностью хранения артикулов с низкой и средней скоростью и позволяют осуществлять комплектацию с высокой пропускной способностью. Например, вы можете легко получить 5000–7000 мест на вертикальной карусельной машине высотой 20 футов, что позволит вам максимально эффективно использовать пространство над головой вашего склада. Эти модули способны автоматически доставлять необходимые товары через окно на уровне талии, что обеспечивает лучшую эргономику комплектации, высокую пропускную способность.

Как вертикальные, так и горизонтальные карусельные модули обеспечивают быстрое и надежное хранение и извлечение, обеспечивают высокий уровень точности комплектации. Таким образом, они могут помочь повысить эффективность ваших операций по комплектованию, что дополнительно способствует оптимизации процесса выполнения заказов.

Современные складские технологии включают сложные системы, обеспечивающие эффективный и точный обмен данными. Технология электронного обмена данными (EDI) теперь позволяет деловым партнерам быстро передавать данные и автоматизировать некоторые процессы обмена данными. Транзакции автоматизированы на основе набора правил или шаблонов, что позволяет легко обмениваться такими документами, как счета-фактуры, счета за транзакции, заказы на покупку, предварительные уведомления об отправке и запросы на доставку. Технология EDI также обеспечивает надежную защиту, например, защиту от кражи личных данных , защиту от фишинга и многое другое.

Поскольку передача данных происходит автоматически и происходит в электронном виде, это сводит к минимуму риск ошибок, которые могут

возникнуть при ручном вводе данных. Это также устраняет необходимость проверки данных, что еще больше ускоряет процесс.

Складам необходимо внимательно следить за запасами и знать, где находится каждый предмет, чтобы их можно было легко отследить и получить. Более того, им также необходимо отслеживать количество единиц товара на складе, чтобы поддерживать здоровый уровень запасов и своевременно пополнять запасы. Использование технологии инвентарного сканирования сделало эту задачу проще, осуществимее и точнее для предприятий.

Штрих-коды продуктов содержат полезную информацию о продукте, которая может помочь складам определить, что это за товар, сколько он стоит и где он хранится на складах. Они также могут использовать штрих-коды для расчета количества единиц товара на складе, что может упростить отслеживание запасов.

Кроме того, также можно использовать штрих-коды доставки, чтобы отслеживать посылки, проходящие через различные этапы процесса доставки и выполнения. Таким образом, получают лучшую видимость своих заказов, когда они отправляются с складов и выгружаются в разных точках взаимодействия, пока не достигнут конечного пункта назначения.

Технология RFID или радиочастотной идентификации позволяет складам отслеживать запасы в режиме реального времени с использованием электромагнитных волн. Склады могут прикреплять RFID-метки к своим продуктам или упаковкам и отслеживать физическое перемещение запасов на разных этапах складских операций. В отличие от штрих-кодов, RFID не требуют использования сканеров для отслеживания движения запасов, что обеспечивает лучшую автоматизацию.

Системы управления складом позволяют предприятиям вести точный учет своих запасов. Этот тип технологии гарантирует, что склады ведут учет приобретенных ими запасов и полученных ими запасов, проданных продуктов, поэтому они всегда могут получить точное представление об оборачиваемости своих запасов и спросе. Таким образом, они могут лучше прогнозировать, сколько инвентаря им нужно будет перезаказать и когда им нужно будет перезаказать.

Аналогичным образом, эти записи о запасах позволяют им вносить коррективы в планирование закупок. Они могут принимать обоснованные решения о том, какие SKU снять с производства и какие из них будут пользоваться большим спросом.

Сегодня, когда доступно так много новых решений в области складских технологий, рынок наводнен вариантами для бизнеса в области электронной коммерции. Из-за этого может быть чрезвычайно сложно найти правильные решения, которые могут положительно повлиять на складские операции.

Решения в области складских технологий, как правило, стоят больших денег, а их внедрение может оказаться очень дорогим. Более того, компании должны учитывать способность программного обеспечения интегрироваться

с остальными вашими системами – как существующими, так и новыми. А если создается собственный склад, также необходимо принять во внимание технологию безопасности периметра, чтобы обеспечить защиту как снаружи, так и внутри объекта.

Таким образом, компании могут рискнуть создать больше проблем, чем они изначально намеревались решить, поскольку эти новые складские технологические решения могут быть дорогими и сложными в реализации. К счастью, аутсорсинг всего процесса управления складом может решить большинство этих проблем, если работаете с 3PL, использующим новейшие складские технологии. Альтернативно, решения по управлению складом SaaS также могут предложить более простое и экономически эффективное решение, чем одновременное внедрение нескольких новых технологий.

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ПЕРСПЕКТИВЫ ИСПОЛЬЗОВАНИЯ НИЗИННОГО ТОРФА В УСЛОВИЯХ КАРАКАЛПАКСТАНА

Аннотация:*В статье рассматриваются потенциальные возможности применения низинного торфа в аридных условиях Каракалпакстана для решения актуальных проблем, связанных с засолением почв, опустыниванием и дефицитом влаги. Обосновывается целесообразность использования низинного торфа в качестве мелиоранта и органического удобрения, способного улучшить физико-химические свойства почв, повысить их влагоемкость и обеспечить растения необходимыми питательными веществами.*

Ключевые слова*: ресурс, Аральское море, компонент, торф, засуха, удобрения, засоление.*

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PROSPECTS FOR USING LOW-LAND PEAT IN KARAKALPAKSTAN

Abstract:*The article discusses the potential for using low-land peat in the arid conditions of Karakalpakstan to solve urgent problems associated with soil salinization, desertification and moisture deficiency. The feasibility of using low-land peat as an ameliorant and organic fertilizer that can improve the physicochemical properties of soils, increase their moisture capacity and provide plants with the necessary nutrients is substantiated.*

Key words*: resource, Aral Sea, component, peat, drought, fertilizers, salinization.*

Каракалпакстан, расположенный в засушливой зоне Узбекистана, сталкивается с серьезными экологическими проблемами, включая засоление почв, опустынивание и дефицит водных ресурсов, усугубленные последствиями высыхания Аральского моря. В этой связи, изучение перспектив использования низинного торфа, как местного ресурса, представляется весьма актуальным. Низинный торф, формирующийся в условиях избыточного увлажнения, обладает высоким содержанием органического вещества, гуминовых кислот и микроэлементов, что делает его ценным компонентом для повышения плодородия засоленных и песчаных почв, преобладающих в регионе.

Одним из перспективных направлений является применение торфа в качестве органического удобрения. Внесение торфа в почву способствует улучшению ее структуры, влагоудерживающей способности и аэрации. Гуминовые вещества, содержащиеся в торфе, стимулируют рост и развитие растений, повышают их устойчивость к неблагоприятным факторам окружающей среды, таким как засоление и засуха. Помимо прямого удобрения, торф может использоваться для приготовления компостов, смешиваясь с другими органическими отходами, что позволяет получить высококачественное удобрение с улучшенными агрохимическими свойствами.

Другим важным аспектом является использование торфа в качестве мелиоранта для засоленных почв. Торф обладает способностью связывать соли и снижать их концентрацию в почвенном растворе, что создает более благоприятные условия для роста растений. Внесение низинного торфа может способствовать снижению засоления почв за счет улучшения их структуры, влагоемкости и водопроницаемости. Гуминовые кислоты, содержащиеся в торфе, способны связывать ионы солей, препятствуя их накоплению в верхних горизонтах почвы. Кроме того, органическое вещество торфа активизирует почвенную микрофлору, что также положительно сказывается на плодородии.

Кроме того, торф способствует улучшению дренажных свойств почвы, предотвращая заболачивание и соленакопление.

Низинный торф обладает высокой влагопоглощающей способностью. Его внесение в почвы Каракалпакстана, характеризующиеся недостаточной влагообеспеченностью, позволит увеличить запас доступной для растений влаги, снизить частоту поливов и повысить устойчивость сельскохозяйственных культур к засухе. А также низинный торф является источником органического азота, фосфора, калия и микроэлементов, которые высвобождаются постепенно в процессе его разложения, обеспечивая сбалансированное питание растений на протяжении вегетационного периода. Это позволяет снизить потребность в минеральных удобрениях и уменьшить химическую нагрузку на окружающую среду.

В условиях Каракалпакстана значительные площади пастбищ подверглись деградации в результате засоления и опустынивания. Внесение

низинного торфа может способствовать улучшению почвенных условий и стимулировать рост кормовых растений, что позволит повысить продуктивность пастбищ и обеспечить кормовую базу для животноводства.

Низинный торф может использоваться в качестве основного компонента тепличных грунтов, обеспечивая оптимальные физические и питательные условия для выращивания овощных и других культур в защищенном грунте. Это особенно актуально в условиях резко континентального климата Каракалпакстана.

Для успешного внедрения технологий использования торфа необходимо учитывать местные особенности и проводить адаптацию существующих методик. Важным этапом является предварительная подготовка торфа к использованию. Она включает в себя проветривание, измельчение и, при необходимости, нейтрализацию избыточной кислотности. Также следует проводить анализ торфа для определения его химического состава и подбора оптимальных доз внесения в зависимости от типа почвы и выращиваемой культуры.

Эффективным методом является использование торфяных субстратов для выращивания рассады и тепличных культур. Торфяные субстраты обеспечивают оптимальные условия для развития корневой системы, что способствует повышению приживаемости рассады и увеличению урожайности тепличных овощей и зелени. В условиях Каракалпакстана, где наблюдается дефицит качественной рассады, использование торфяных субстратов может стать важным фактором повышения продуктивности сельского хозяйства.

Комплексный подход к использованию низинного торфа, учитывающий местные особенности, агрохимические свойства торфа и экологические аспекты, позволит максимально реализовать его потенциал для повышения плодородия почв Каракалпакстана. Дальнейшие исследования и опытно-производственные испытания помогут определить наиболее эффективные и экологически безопасные способы применения торфа в различных агроклиматических зонах региона.

Таким образом, использование низинного торфа в условиях Каракалпакстана открывает широкие перспективы для повышения плодородия почв, улучшения урожайности сельскохозяйственных культур и решения экологических проблем, связанных с засолением и деградацией земель. Необходимо проведение дальнейших исследований для определения оптимальных доз и способов применения торфа, а также для оценки его влияния на различные типы почв и культуры в регионе.

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ВЗАИМООТНОШЕНИЯ СТРОИТЕЛЬНОГО ФАКУЛЬТЕТА И ПРОЕКТНОЙ ОРГАНИЗАЦИИ ПРИ ПОДГОТОВКЕ ИНЖЕНЕРОВ-СТРОИТЕЛЕЙ

Аннотация: *В статье рассмотрены современные формы взаимодействия строительных факультетов высших учебных заведений с проектными организациями в процессе подготовки инженеров-строителей. Представлены результаты сравнительного анализа эффективности подготовки специалистов при наличии и отсутствии партнёрства с производственными структурами. Обоснована необходимость системной интеграции практико-ориентированного обучения в образовательные программы, выдвинуты предложения по совершенствованию таких взаимодействий.*

Ключевые слова: *Инженер-строитель, проектная организация, вуз, практика, производственное обучение, дуальное образование, профессиональная подготовка, взаимодействие.*

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THE RELATIONSHIP BETWEEN THE FACULTY OF CIVIL ENGINEERING AND THE DESIGN ORGANIZATION IN THE TRAINING OF CIVIL ENGINEERS

Abstract: *The article examines modern forms of interaction between the construction faculties of higher educational institutions and design organizations*

in the process of training civil engineers. The results of a comparative analysis of the effectiveness of training specialists in the presence and absence of partnerships with production structures are presented. The necessity of systematic integration of practice-oriented learning into educational programs is substantiated, and proposals for improving such interactions are put forward.

Keywords: *Civil engineer, design organization, university, practice, industrial training, dual education, professional training, interaction.*

Современные условия строительной отрасли требуют от выпускников вузов не только глубоких теоретических знаний, но и практических навыков, позволяющих сразу влиться в производственный процесс. Однако в реальности зачастую наблюдается отставание уровня профессиональной подготовки студентов от требований работодателей, особенно проектных организаций. Это связано с ограниченным взаимодействием между учебными заведениями и практико-ориентированными структурами.

Интеграция строительных факультетов и проектных организаций в единую образовательную и производственную среду представляет собой необходимый шаг в условиях быстро меняющихся технологий и нормативной базы в строительной отрасли. Подготовка инженеров-строителей не может быть эффективной, если она основана исключительно на теоретических знаниях, оторванных от реальной практики. Проектные организации, являясь активными участниками строительного процесса, обладают актуальной информацией о современных требованиях к проектированию, цифровому моделированию (BIM), строительным материалам, нормативной документации и практическим задачам, возникающим на всех этапах жизненного цикла объекта капитального строительства.

Включение этих организаций в процесс подготовки кадров способствует обновлению содержания образовательных программ, а также позволяет формировать у студентов критически важные компетенции: практико-ориентированное мышление, способность работать в команде, опыт реального проектирования. В образовательной среде это может реализовываться через:

- **Разработку совместных учебных курсов** (например, по цифровому моделированию, проектированию с учётом СП и ГОСТ);
- **Производственные стажировки и практики**, проходящие в условиях действующих проектных бюро или строительных организаций;
- **Участие профессионалов отрасли в преподавании** и в роли внешних экспертов при защите выпускных квалификационных работ;
- **Организацию проектных семестров**, где студенты работают над реальными задачами под руководством представителей проектных организаций;

- **Формирование совместных исследовательских групп** для решения актуальных проблем строительной практики.

Цель настоящей статьи заключается в том, чтобы не только описать текущие формы взаимодействия между вузами и проектными организациями, но и критически проанализировать недостатки как существующего сотрудничества, так и полного его отсутствия. В частности, отсутствие интеграции ведёт к тому, что:

- Выпускники не владеют современными прикладными инструментами проектирования (например, Autodesk Revit, SCAD Office);
- Учебные планы устаревают и не учитывают текущие вызовы (энергоэффективность, устойчивое строительство, цифровизация);
- Студенты теряют мотивацию, не видя связи между обучением и будущей профессией;
- Работодатели вынуждены самостоятельно «доучивать» молодых специалистов, тратя ресурсы и время.

Поэтому необходим поиск и реализация устойчивых моделей интеграции академического образования с производственной практикой, среди которых важнейшими являются **дуальное образование**, **корпоративные кафедры**, **производственно-образовательные кластеры**, **консорциумы вуз–бизнес–государство**.

Таким образом, предлагается рассматривать интеграцию не как дополнительную опцию, а как **системную стратегию**, обеспечивающую качественную подготовку инженерных кадров, способных не только адаптироваться к реалиям отрасли, но и становиться её проводниками в эпоху технологических преобразований.

Для оценки эффективности сотрудничества строительных факультетов с проектными организациями, проведён сравнительный анализ по ряду показателей: качество подготовки выпускников, адаптация на рабочем месте, мотивация студентов, кадровый резерв, актуализация учебных программ и участие работодателей в образовательном процессе.

Сравнение подготовки специалистов при наличии и отсутствии взаимодействия с проектной организацией

1-таблица.

Критерий	При взаимодействии	При отсутствии взаимодействия
Качество практических навыков	Высокое (реальные кейсы, проектные задачи)	Низкое (имитационные задачи, теория)
Адаптация выпускника на рабочем месте	Быстрая (знаком с реальной практикой)	Затруднённая (период адаптации до 6 мес.)
Актуальность учебных программ	Высокая (участие работодателей)	Умеренная (устаревшие стандарты)

Критерий	При взаимодействии	При отсутствии взаимодействия
Уровень мотивации студентов	Повышенный (осознание профессионального пути)	Снижен (абстрактные цели)
Возможности трудоустройства	Выше (контакты, стажировки, портфолио)	Ниже (нет прямых связей с рынком труда)
Участие в НИР и реальных проектах	Да (в рамках производственных заданий)	Ограниченное (внутривузовские темы)
Кадровый резерв для проектных организаций	Формируется целенаправленно	Случайный (через открытый рынок труда)

Современные вызовы в строительной отрасли диктуют необходимость пересмотра традиционных подходов к подготовке инженерных кадров. Только тесное и структурированное взаимодействие между строительными факультетами и проектными организациями позволяет добиться подготовки специалистов, готовых к работе с первого дня. Образование и производство должны стать партнёрами, а не параллельными системами. Это обеспечит устойчивое развитие как строительного сектора, так и системы высшего образования.

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МЕТОДИКА ФОРМИРОВАНИЯ ТВОРЧЕСКИХ СПОСОБНОСТЕЙ УЧАЩИХСЯ НАЧАЛЬНЫХ КЛАССОВ

Аннотация: *В данной статье представлены мнения по вопросам повышения творческих способностей учащихся младших классов. Подчеркнута роль и значение мотивации творческого мышления учащихся младших классов в приобретении необходимых знаний, умений и навыков и умении применять их в жизни.*

Ключевые слова: *образование, методика, мышление, творчество, знак, упражнение, мышление, творчество, мышление, свобода.*

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METHODS OF FORMATION OF CREATIVE ABILITIES OF PRIMARY SCHOOL STUDENTS

Abstract: *This article presents opinions on improving creativity among primary school students. The role and importance of motivation of creative thinking in elementary school students in acquiring the necessary knowledge, skills and abilities and being able to apply them to life has been explained.*

Key words: *education, methodology, thinking, creativity, sign, exercise, thinking, creativity, thinking, freedom.*

В нашей республике проводится ряд реформ в сфере образования. Как отметил наш президент, " сегодня есть одна проблема, которая становится для всех нас самой важной: результат всех реформ, которые мы проводим, зависит именно от того, как мы решаем эту проблему. Он также является смыслом нашей жизни, молодым поколением, которое является хозяином нашего завтрашнего дня, воспитанием наших детей” [1330].

Особое внимание было уделено тому, что одним из важных факторов, влияющих на методы и средства развития творческих способностей младших школьников, является сотрудничество учителя и ученика. Как известно, образовательный процесс носит двусторонний характер и состоит из равноправных отношений учителя и учащихся. Учитель, руководящий этим процессом, является лицом, ответственным за правильную организацию образовательного процесса, правильную реализацию образовательных целей и результатов обучения. Но это не может служить основанием для зарождения ошибочного представления о том, что учебный процесс-это процесс, осуществляемый под полным господством учителя. Требование текущего периода также состоит в том, чтобы добиться положительного результата с помощью отношения сотрудничества, а не путем унижения кого-либо. Важно помнить, что формирование деятельности учащихся в образовательном процессе является не только механизмом усвоения основ науки, но и направлено на содержание общих социокультурных способностей личности [4, 506].

Педагогический креатив не следует понимать только как стремление к новизне, экспериментированию. Это стремление также выражает победу здравого смысла над формальностями. Там, где нет демократии, гласности, администрации и воли воспитателя, творческое сотрудничество прекращается, когда в процессе урока нарушается самостоятельная мыслительная деятельность учащихся. Особое место на уроках начальных классов занимает работа над заданиями, которые служат развитию творческих способностей учащихся. Мыслительную деятельность учащийся осуществляет посредством устной или письменной речи, опираясь на жизненный и учебный опыт в комфортных для него условиях. В ней возникает психологическая подготовка к активному сотрудничеству с преподавателем в конкретике неизвестных ему граней каждого предмета. Он стремится к самостоятельному творческому поиску адекватных ответов на поставленные вопросы по теме. Воспитатель в процессе такого сотрудничества не только развивает креативность учащихся, но и выполняет диагностическую задачу, т. е. определяет способности, круг интересов учащихся, угадывает их творческие способности. Это невероятно важно в процессе работы над заданиями, способствующими творчеству. Начальное образование-это один из видов образования, который оставляет глубокий след в жизни каждого ребенка, и на этом этапе обучения на педагогов возлагается большая ответственность. То есть методика развития творческих способностей младших школьников еще требует специального изучения [3,15].

Учителя могут добиться того, чтобы ученики были креативными, то есть с особым подходом, работая вместе с учениками, выполняя важные задачи, такие как учет каждой их мысли и ее восприятие учеником.Творческий подход ученика к поиску решения задачи, когда учитель дает ученикам проблемные вопросы и ситуации, способствует развитию в нем эмоционально-волевых качеств. Это дает возможность

учащимся работать над собой, учиться самостоятельно, стимулирует рост внутренней потребности. Понятие» креативность «связано с понятием» творчество". Однако понятие» креативность " не нашло достойной дифференциации в соответствующих словарях и недостаточно определено в психологии творчества. Несмотря на то, что десятки научных работ по-разному подходят к тем или иным аспектам креативности и охватывают их в разной степени, до сих пор нет единой точки зрения ни на саму проблему, ни на практические вопросы, относящиеся к ней [3, 16].

Теоретические основы творческой организации начального образования, вопросы различных методик, методов расширения возможностей творческого мышления личности в процессе обучения, формирования у непосредственного индивида способности к творчеству получили развитие у ученых Республики Б.Адизов, Н.Дилова, Р.Ибрагимов, Г.Ибрагимова, Г.Наджмиддинова, Р.Нуржанова, Р.G.Сафарова, Н.Ташева, Х.J.Худайкулов, Ф. Ихсановой; а также психологии творчества и творческого мышления г.Давлетшин, Е.Газиев, З.Исследовано нишоновыми. Из ученых стран Содружества независимых государств (СНГ) В. Е. Андреев, д.В.Богоявленская, Г.М.Мардонова, М.V.Голубева, О.Р.Тарасова, О.V.Сорокин, В.V.Сериковыми исследованы проблемы определения состава будущих педагогов, духовно-нравственного формирования будущих педагогов, педагогических принципов развития личности в процессе воспитания, развития творческих способностей и творческой деятельности личности [6, 6].

Творческая деятельность как развивающая категория личности является неотъемлемой частью мышления, духовности человека, она проявляется не в многогранности знаний, которыми обладает человек, а в стремлении к новым идеям, в переформулировке и изменении устоявшихся стереотипов, в принятии неожиданных и необычных решений в процессе решения жизненных проблем. Формирование творческого мышления напрямую зависит от жизненного опыта, уровня знаний, образа жизни личности и межличностных отношений. Потому что творческая деятельность-это, по сути, результат разнообразного комплекса знаний, опыта и умений. Педагогический креатив-проявляется в способности педагога генерировать новые идеи, служащие для обеспечения эффективности учебно-воспитательного процесса в отличие от традиционного педагогического мышления, а также характеризующие его готовность к позитивному решению существующих педагогических задач. Творческая деятельность педагога-это творчество педагога, которое отражается в его творческом подходе к организации организуемой им профессиональной деятельности. В последние годы эта ситуация выражается понятием "педагогический креатив" [2,56].

Начальное образование-это один из видов образования, который оставляет глубокий след в жизни каждого ребенка, и на этом этапе обучения на педагогов возлагается большая ответственность. Творческий подход ученика к поиску решения задачи, когда учитель дает ученикам проблемные

вопросы и ситуации, способствует развитию в нем эмоционально-волевых качеств. Это дает возможность учащимся работать над собой, учиться самостоятельно, стимулирует рост внутренней потребности. Понятие» креативность «связано с понятием» творчество". Однако понятие» креативность " не нашло должной дифференциации в соответствующих словарях и недостаточно определено в психологии творчества [5, 68].

Несмотря на то, что десятки научных работ по-разному подходят к тем или иным аспектам креативности и охватывают их в разной степени, до сих пор нет единой остановки ни в отношении самой проблемы, ни в отношении практических вопросов, относящихся к ней. Подводя итог вышеперечисленным пунктам, мы пришли к выводу, что креативность и креативность не означают одно и то же. Потому что под творчеством подразумевается,что каждый может придумать что-то конкретное, нарисовать и т. д. Но в нашем исследовании мы воспринимали креативность как способность находить путь к поставленной задаче в процессе урока, как никто другой, и уметь научно обосновать ее, мыслить по-новому, применять на практике. То есть в нашем исследовании мы рассматриваем креативность в области образования, то есть методику развития творческих способностей учащихся начальной школы. Креативность учителя имеет приоритетную классификацию. Знакомясь с исследовательскими работами вышеуказанных ученых-педагогов, обобщая их все, мы хотим признать следующие моменты:
1. Креативность-педагогическая категория, побуждающая учителей к новаторству.

2. Креативность-интеграция профессиональных и личностных качеств педагога. Потому что, не будучи по натуре любознательным, целеустремленным, учитель никогда не сможет проявить творческий подход.
3. Креативность-не стихийное качество у педагогов, она обусловлена стремлением педагога к новизне, способностью усваивать новизну и преодолевать трудности, с которыми он сталкивается в своей педагогической деятельности, способностью активно, творчески использовать новизну в своей деятельности и опираться на собственные авторские идеи, находить решения (эвристические).

4. Формирование креативности учителя происходит от «потребностей, ориентаций и «я-концепций». Проявление творческой деятельности учителя во всех видах педагогической деятельности является требованием периода. Креативность учителя, проявляющаяся во всех видах педагогической деятельности, является требованием времени. Можно сделать вывод, что творческая деятельность учителя связана, прежде всего, с педагогическим мастерством. Подводя итог, резюмируя вышеперечисленные пункты, мы пришли к выводу, что креативность и креативность не означают одно и то же. Потому что под творчеством подразумевается,что каждый может придумать что-то конкретное, нарисовать и т. д. Но в нашем исследовании мы воспринимали креативность как способность находить путь к поставленной задаче в процессе урока, как никто другой, и уметь научно обосновать ее,

мыслить по-новому, применять на практике. Мы пришли к выводу, что креативность-это более широкое понятие, чем творчество.

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ЭКСПЕРИМЕНТАЛЬНОЕ ОПРЕДЕЛЕНИЕ НАГРУЖЕННОСТИ МНОГОГРАННЫХ КОНИЧЕСКИХ КОЛОСНИКОВ НА УПРУГИХ ОПОРАХ ОЧИСТИТЕЛЯ ХЛОПКА

Аннотация: *На основании проведенных экспериментов с изменением количества граней колосников в зоне протаскивания хлопка имеет синусоидальную (треугольную) форму относительно хлопка по граням колосников, с различным углом расположения, что приводит выделению сорные примеси различной массы и различной глубины нахождения в хлопке. Сила ударной нагрузки максимально влиять на количество выделяемых сорных примесей при условии сохранения природного качества волокна, расстояние колосника от вращающегося барабана должна обеспечивать свободное прохождение летучек. При ударе и взаимодействии дольки хлопка с колосниками важно, чтобы поведение соринок приводило к хаотическому расположению.*

Ключевые слова: *колосниковая решетка, пильчатый барабан, хлопок-сырец, очиститель, импульсный удар.*

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EXPERIMENTAL DETERMINATION OF THE LOADING OF POLYHEDRAL CONICAL GRATES ON ELASTIC SUPPORTS OF A COTTON CLEANER

Abstract: *Based on the experiments conducted with a change in the number of grate faces in the cotton dragging zone, it has a sinusoidal (triangular) shape relative to the cotton along the grate faces, with a different angle of location, which leads to the release of impurities of various masses and different depths of presence in the cotton. The force of the impact load has the greatest impact on the amount of released impurities, provided that the natural quality of the fiber is preserved; the distance of the grate from the rotating drum should ensure the free passage of the fly. When a cotton piece hits and interacts with the grate, it is important that the behavior of the specks results in a chaotic arrangement.*

Key words: *grate, saw-tooth drum, raw cotton, cleaner, pulse impact.*

Введение. Основной целью экспериментальных исследований является изучение фактической загруженности рекомендуемых многогранных конических колосников на упругих опорах с нелинейной

жесткостью. При этом важными являются сравнения загруженности рекомендуемых колосников с существующими на производстве в машинах УХК [1,2,3]. Полученные результаты будут использованы в теоретических исследованиях, а также будут обоснованы необходимые параметры системы.

Методика проведения экспериментальных исследований.

Нагрузка на конические колосники возникают при их взаимодействии с хлопком - сырцом. При этом колосники в основном испытывают изгибные деформации[4,5]. Поэтому для измерения изгибающих сил и амплитуд колебаний многогранных конических колосников при их деформации использовали метод тензометрирования, сигналы были усилены усилителем, а запись осуществляли на осциллографической бумаге.

Данной метод основывается на использовании тензорезисторов (проволочных тензодатчиков с определенной базой и сопротивлением). Методика выбора и наклейки тензометрических датчиков принята согласно известным работам И.П. Раевского, И. Немеца и др[6].

Экспериментальные исследования проводились в производственных условиях «Бахт»ского хлопзавода Сирдарьинского вилоята, на 1-й и 2-й линиях очистителя УХК. На рис.1.1 представлены опытные образцы многогранных конических колосников, (а) и колосниковой решетки (б) с коническими колосниками установленные на сегментах посредством резиновых втулок с переменной толщиной (эксцентриситетами). Следуют отметить, что каждой секции между сегментами многогранные конические колосники могут быт установлены индивидуально. На рис. 1.2 приведены фотографические снимки секции крупной очистки линии УХК с колосниковой решеткой с многогранными коническими колосниками на упругих опорах в рабочем положении (а), а также варианты исполнения резиновых втулок с переменной толщиной (б). Общий вид линии очистки УХК с опытными конструкциями колосниковой решетки с многогранными коническими колосниками на упругих опорах представлены на рис. 1.2, а на рис. 1.3 приводится общий вид комплекса электротензометрительной аппаратуры для тензометрирования.

На рис. 1.3 приведена схема электротензометрирования колосников очистителя хлопка-сырца от крупного сора. Для измерения нагруженности многогранных конических колосников на упругих опорах использовали следующие приборы и датчики: проволочные тензометрические датчики ПКВ-20-200,6 с базой 20мм, которые были наклеены на колосники в четырех местах (две по краям и две по середине между сегментами решетки) по полумостовой схеме; блок питания, который преобразует ток и напряжение для усилителя типа УТ-4; осциллограф Н 042. При нагружении колосников они деформируются, то – есть изгибаются. При этом проволочные тензодатчики также деформируются, изменяются их сопротивление, что приводить к изменению напряжения. Эти изменения, сигналы передаются в усилитель УТ-4. Усиленные сигналы передаются в осциллограф, через которого полученные сигналы записываются на осциллографической бумаге.

При этом в статическом положении проводятся тарирование датчиков. Для этого на колосники в зонах подвешиваются гиры и фиксируются сигналы на осциллографе и строится графики изменения перемещения зайчика осциллографа от изменения подвешиваемого груза. Эксперименты проводились на очистителе УХК в заводских условиях в «Бахт»ском хлопкозаводе Сирдарьинского вилоята.

Рис.1.1. Секция колосниковой решетки с коническими колосниками на упругих опорах перед установкой на очиститель хлопка

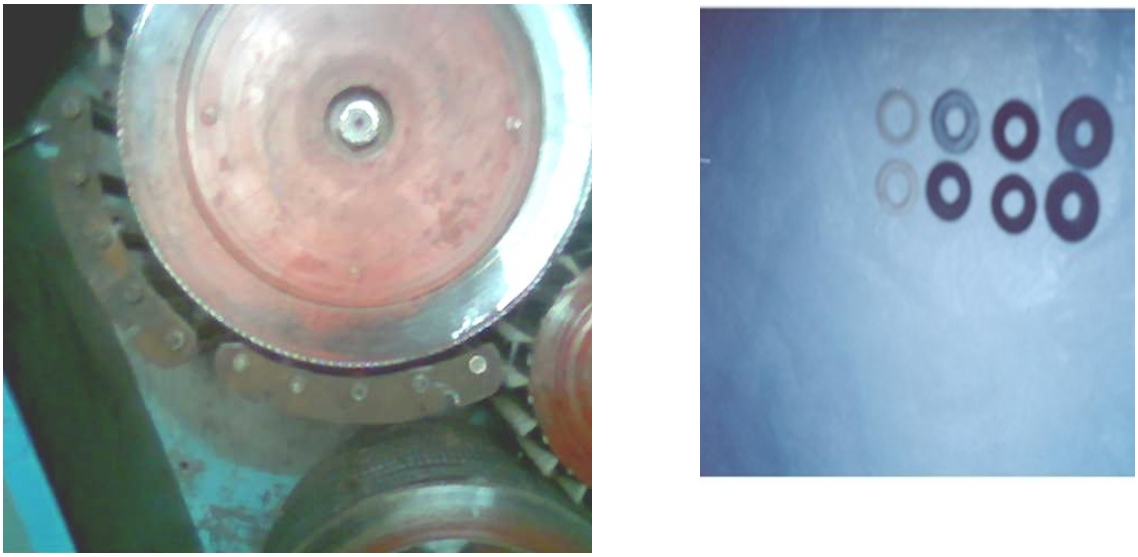

Рис. 1.2. *а*- Общий вид колосниковой решетки с коническими колосниками на упругих опорах установленные в очистителе УХК, *б*- Варианты резиновых втулок с различной толщиной и эксцентриситетом.

б

Рис.1.3. Общий вид комплекса электроизмерительной аппаратуры для тензометрирования.

Грани колосников влияют на прочность удерживания летучек на поверхности пильчатого барабана, разрушая плотность хлопка и разгружая повторно и равномерно на поверхности гарнитуры пильчатого барабана, что дает возможность эффективно удалять соринки из хлопка, в результате чего, способствует повышению очистительного эффекта.

Сила ударной нагрузки максимально влиять на количество выделяемых сорных примесей при условии сохранения природного качества волокна, расстояние колосника от вращающегося барабана должна обеспечивать свободное прохождение летучек. При ударе и взаимодействии дольки хлопка с колосниками важно, чтобы поведение соринок приводило к хаотическому расположению.

Выводы: С многогранными коническими колосниками можно удерживать наиболее слабо закрепленных летучек хлопка, что приводит к повторному и равномерному разгружению на зубья пильчатого барабана, а также разрушать плотность комков хлопка что, дает возможность эффективно удалять соринки из хлопка, в результате, чего способствует повышению очистительного эффекта.

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СОВРЕМЕННЫЕ ПОДХОДЫ К СТАБИЛИЗАЦИИ ЖИЗНЕННО ВАЖНЫХ ПОКАЗАТЕЛЕЙ В ИНТЕНСИВНОЙ ТЕРАПИИ: ОПТИМИЗИРОВАННЫЕ ПРОТОКОЛЫ ВЕДЕНИЯ В РЕАНИМАЦИОННОЙ ПРАКТИКЕ

Аннотация. *Современная реанимационная практика требует внедрения эффективных и научно обоснованных протоколов интенсивной терапии, направленных на стабилизацию жизненно важных функций организма. В настоящей работе рассмотрены оптимизированные подходы к ведению критически больных пациентов с акцентом на своевременную коррекцию дыхательных, сердечно-сосудистых и метаболических нарушений. Представлены данные о роли мультидисциплинарного подхода, важности мониторинга и персонализированных схем лечения. Особое внимание уделено интеграции современных технологий, включая системы искусственной вентиляции лёгких, мониторинг газообмена, кислотно-щелочного состояния и показателей гемодинамики. Анализ актуальных клинических протоколов и доказательная база позволили выделить наиболее эффективные стратегии ведения пациентов в условиях реанимации. Полученные результаты могут быть использованы для повышения качества интенсивной терапии и улучшения прогноза у критически больных.*

Ключевые слова: *интенсивная терапия, реанимация, жизненно важные функции, стабилизация, протоколы ведения, искусственная вентиляция лёгких, мониторинг, кислородотерапия, гемодинамика, кислотно-щелочное состояние, мультидисциплинарный подход.*

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MODERN APPROACHES TO STABILIZATION OF VITAL SIGNS IN INTENSIVE CARE: OPTIMIZED CARE PROTOCOLS IN RESUSCITATION PRACTICE

Abstract. *Modern resuscitation practice requires the implementation of effective and scientifically based intensive care protocols aimed at stabilizing vital body functions. This paper discusses optimized approaches to the management of critically ill patients with an emphasis on timely correction of respiratory, cardiovascular and metabolic disorders. Data on the role of a multidisciplinary approach, the importance of monitoring and personalized treatment regimens are presented. Particular attention is paid to the integration of modern technologies, including artificial lung ventilation systems, monitoring of gas exchange, acid-base balance and hemodynamic parameters. Analysis of current clinical protocols and the evidence base made it possible to identify the most effective strategies for managing patients in intensive care. The results can be used to improve the quality of intensive care and improve the prognosis in critically ill patients.*

Keywords: *intensive care, resuscitation, vital functions, stabilization, management protocols, artificial lung ventilation, monitoring, oxygen therapy, hemodynamics, acid-base balance, multidisciplinary approach.*

Актуальность

Современная реанимационная медицина сталкивается с возрастающим числом пациентов в критическом состоянии, требующих незамедлительной и высокоэффективной интенсивной терапии. Своевременная стабилизация жизненно важных функций организма играет ключевую роль в снижении летальности и улучшении исходов лечения. Несмотря на развитие технологий и появление новых методов мониторинга и терапии, ведение критически больных пациентов по-прежнему остаётся сложной и многофакторной задачей. Оптимизация лечебных протоколов, основанных на доказательной медицине и мультидисциплинарном подходе, позволяет повысить эффективность реанимационной помощи. В условиях роста клинической нагрузки и ограниченных ресурсов особенно актуальным становится внедрение стандартизированных алгоритмов, направленных на повышение

качества и индивидуализацию лечения. Настоящее исследование направлено на систематизацию и оценку современных подходов к ведению пациентов в отделениях интенсивной терапии с целью повышения качества медицинской помощи и улучшения прогноза.

Цель исследования.

Целью настоящего исследования является анализ и обоснование современных подходов к стабилизации жизненно важных показателей у критически больных пациентов, находящихся в отделениях интенсивной терапии. Особое внимание уделяется оценке эффективности оптимизированных протоколов ведения, включающих мониторинг дыхательной, сердечно-сосудистой и метаболической функций, а также применению современных технологий и персонализированных лечебных стратегий для повышения качества реанимационной помощи и улучшения клинического прогноза.

Материалы и методы.

Исследование было проведено на базе отделения анестезиологии и реанимации многопрофильного стационара, где наблюдались пациенты с различными критическими состояниями: острые дыхательные расстройства, полиорганная недостаточность, септические состояния, тяжелые травмы и осложнения после хирургических вмешательств. В исследование были включены пациенты в возрасте от 18 до 80 лет, находившиеся в отделении интенсивной терапии более 24 часов и нуждавшиеся в многоуровневом мониторинге и интенсивной поддержке жизненно важных функций.

Пациенты были разделены на группы в зависимости от применяемых протоколов ведения: стандартная терапия и терапия по оптимизированным клиническим рекомендациям. Сравнительный анализ проводился с целью оценки влияния современных подходов на стабилизацию жизненно важных показателей.

Оценка состояния пациентов проводилась на основании клинико-лабораторных данных, включая показатели газообмена (pH, pCO_2, pO_2, SaO_2), гемодинамики (ЧСС, АД, ЦВД), диуреза, уровня сознания по шкале Глазго, а также динамики лабораторных маркеров воспаления и органной дисфункции.

Для мониторинга использовались аппараты искусственной вентиляции лёгких с возможностью настройки параметров в соответствии с принципами защитной вентиляции, многофункциональные мониторы с регистрацией ЭКГ, сатурации кислорода, неинвазивного и инвазивного артериального давления. Также применялись лабораторные методы анализа кислотно-щелочного состояния и электролитного баланса, а также биохимические исследования.

Методы статистической обработки данных включали использование программного обеспечения (SPSS 26.0). Для количественных показателей применялись описательные статистики (среднее значение, стандартное отклонение), а также методы сравнительного анализа (t-критерий Стьюдента, χ^2-критерий). Статистически значимыми считались различия при $p < 0,05$.

Результаты исследования.

В результате проведенного исследования было установлено, что применение оптимизированных протоколов интенсивной терапии значительно улучшает показатели жизненно важных функций у пациентов в критическом состоянии по сравнению со стандартными подходами.

У пациентов, получавших лечение по оптимизированным схемам, наблюдалась более быстрая стабилизация дыхательных показателей: уровень сатурации кислорода (SpO_2) повышался до стабильных значений ≥ 94 % в течение первых 6–8 часов, в то время как в контрольной группе — в среднем спустя 12–14 часов. Парциальное давление кислорода (pO_2) в артериальной крови в основной группе достигало физиологических значений (80–100 мм рт. ст.) в более короткие сроки и сопровождалось снижением потребности в FiO_2.

По показателям гемодинамики пациенты основной группы демонстрировали более быструю нормализацию артериального давления, средней ЧСС и ЦВД без необходимости в значительных дозах вазопрессоров. Среднее время стабилизации гемодинамики составило 12,6 ± 3,1 часа против 20,4 ± 4,7 часа в контрольной группе ($p < 0,05$).

Мониторинг кислотно-щелочного состояния показал, что в группе с оптимизированным лечением pH крови стабилизировался до нормы (7,35–7,45) уже в первые сутки лечения, тогда как у пациентов контрольной группы сохранялись признаки метаболического ацидоза в течение 48 часов и более. Концентрация лактата в крови также быстрее снижалась у пациентов основной группы, что указывало на улучшение тканевой перфузии.

Средняя продолжительность пребывания в отделении интенсивной терапии в основной группе составила 4,8 ± 1,2 суток, в то время как в контрольной — 6,5 ± 1,7 суток ($p < 0,05$). Количество летальных исходов было ниже в группе с применением оптимизированных протоколов: 8,3 % против 15,6 % в контрольной группе, что свидетельствует о большей эффективности индивидуализированного и стандартизированного подхода к ведению пациентов.

Также отмечалось снижение частоты таких осложнений, как вентилятор-ассоциированная пневмония, острое повреждение почек и пролежни, за счёт более раннего вмешательства, адекватной ротации положения тела и строгого контроля за водно-электролитным балансом.

Таким образом, результаты исследования подтверждают, что внедрение современных протоколов интенсивной терапии, основанных на принципах доказательной медицины и междисциплинарного подхода, способствует улучшению клинических исходов, сокращению длительности пребывания в реанимации и снижению уровня осложнений.

Выводы

Проведённое исследование подтвердило высокую клиническую значимость применения оптимизированных протоколов интенсивной терапии при лечении критически больных пациентов. Внедрение индивидуализированного и стандартизированного подхода к ведению таких

пациентов способствует более быстрой стабилизации жизненно важных функций, снижению риска осложнений и уменьшению показателей летальности.

Использование современных методов мониторинга дыхательной и гемодинамической функций, а также регулярная оценка кислотно-щелочного и водно-электролитного баланса позволяет своевременно выявлять и корректировать возникающие нарушения, тем самым улучшая качество медицинской помощи. В частности, обеспечивается более эффективная оксигенация тканей, снижается частота гипоксемии и гипокапнии, что существенно влияет на общий прогноз.

Результаты настоящего исследования также указывают на необходимость мультидисциплинарного подхода в интенсивной терапии, включающего тесное взаимодействие анестезиологов-реаниматологов, терапевтов, лабораторных диагностов и среднего медицинского персонала. Только командная работа с чётким соблюдением протоколов позволяет достичь максимальной эффективности лечения.

Таким образом, полученные данные обосновывают важность дальнейшего совершенствования протоколов ведения пациентов в отделениях интенсивной терапии с акцентом на персонализированные стратегии лечения, что особенно актуально в условиях роста числа тяжёлых и коморбидных пациентов. Внедрение данных подходов в практику может стать одним из ключевых факторов повышения уровня интенсивной медицинской помощи и снижения нагрузки на систему здравоохранения в целом.

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РАННЯЯ ДИАГНОСТИКА ЗАБОЛЕВАНИЙ РАСТЕНИЙ ТОМАТА: ТРАДИЦИОННЫЕ И СОВРЕМЕННЫЕ ПОДХОДЫ К ДИАГНОСТИКЕ

Аннотация: *В данной статье анализируются методы диагностики, направленные на выявление основных грибковых, бактериальных и вирусных заболеваний растений томата (Solanum lycopersicum L.). На основе местных и международных исследований освещается роль ранней диагностики и её значение в определении стратегий химической и биологической борьбы. Также рассматриваются перспективы автоматизированной диагностики с использованием технологий, основанных на искусственном интеллекте.*

Ключевые слова: *болезни томатов, методы диагностики, молекулярная диагностика, серологические тесты, фитопатогены, LAMP, qPCR, биологический контроль*

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EARLY DIAGNOSIS OF TOMATO PLANT DISEASES: TRADITIONAL AND MODERN APPROACHES TO DIAGNOSIS

Abstract: *This article analyzes diagnostic methods aimed at identifying major fungal, bacterial, and viral diseases of tomato plants (Solanum lycopersicum L.). Based on local and international research, the role of early diagnosis and its significance in determining chemical and biological control strategies are highlighted. The article also explores the prospects of automated diagnostics using artificial intelligence-based technologies.*

Keywords: *tomato diseases, diagnostic methods, molecular diagnostics, serological tests, phytopathogens, LAMP, qPCR, biological control*

Томат *(Solanum lycopersicum L.)* является одним из самых распространённых овощей в мире и играет важную роль в пищевой промышленности и сельском хозяйстве. Он богат витаминами и минералами, полезными для здоровья человека, особенно высоким содержанием ликопина — вещества с антиоксидантными свойствами. Высокая урожайность и качество томата зависят от эффективности агротехнических мероприятий, а также от мер по профилактике и борьбе с заболеваниями.

В процессе выращивания томатов различные заболевания, вызываемые грибами, бактериями и вирусами, представляют серьёзную угрозу для роста, развития и урожайности растений. При отсутствии надлежащего контроля эти болезни могут привести к значительному снижению урожайности. Например, такие грибковые заболевания, как фитофтороз (*Phytophthora infestans)* и альтернариоз *(Alternaria solani),* вызывают появление крупных некротических пятен на листьях, стеблях и плодах томата. Бактерии, такие как *Ralstonia solanacearum,* поражают корневую систему растения, что может привести к серьёзным потерям. Вирусные болезни, например, вирус табачной мозаики (TMV) и вирус жёлтой курчавости листьев томата (TYLCV), вызывают деформации в росте растений и снижение урожайности.

Своевременная диагностика заболеваний и методы выявления их патогенов имеют важное значение в сельском хозяйстве. Традиционные методы диагностики, такие как визуальная оценка и лабораторные исследования, позволяют определить симптомы заболеваний. Однако данные методы не всегда достаточно эффективны для точного выявления патогена. Поэтому современные методы диагностики, в частности молекулярная биология и серологические тесты, играют важную роль в раннем выявлении болезней. Например, такие молекулярные методы, как полимеразная цепная реакция (ПЦР), ПЦР в реальном времени (qPCR) и изотермическая амплификация (LAMP), обеспечивают высокую точность и оперативность в диагностике заболеваний.

Проведено множество научных исследований по диагностике и методам выявления болезней томатов. В этом направлении проводятся исследования ведущими мировыми учёными, направленные на раннее выявление заболеваний, их точную диагностику и разработку эффективных стратегий управления.

1. Традиционные методы диагностики

Начальный этап выявления заболеваний томатов чаще всего осуществляется с помощью визуальной оценки. Основываясь на внешних признаках и симптомах заболеваний, можно поставить предварительный диагноз, как это показано в фундаментальных исследованиях таких учёных, как Agrios (2005) и Strange (2003). В их работах подробно описаны симптомы, вызываемые фитопатогенами, факторы их распространения и влияние на урожайность. Однако из-за сложности точной идентификации заболевания только на основании визуальной оценки необходимы дополнительные лабораторные анализы.

Методы выделения и идентификации патогенных микроорганизмов на основе микробиологических и лабораторных исследований были разработаны Klement и соавт. (1990). В их исследованиях описаны методы культивирования патогенных грибов и бактерий в искусственной среде и определения их морфологических характеристик. Несмотря на то, что этот метод может дать точные результаты, он требует много времени и имеет ограничения из-за сложности выращивания некоторых патогенов.

2. Серологические методы диагностики

Для выявления вирусных и бактериальных заболеваний томатов эффективными считаются серологические тесты, в частности метод ELISA (ферментный иммуносорбентный анализ). Метод ELISA, разработанный Clark и Adams (1977), основан на реакции антиген-антитело между вирусами или бактериями и широко используется в настоящее время. В исследованиях López и соавт. (2003) показана высокая эффективность ELISA для обнаружения таких заболеваний, как вирус жёлтой курчавости листьев томата (TYLCV) и вирус увядания пятнистого томата (TSWV). Хотя метод точен и экономичен, в некоторых случаях он может давать ложноположительные или ложноотрицательные результаты.

3. Молекулярные методы диагностики

В последние годы достижения молекулярной биологии значительно расширили возможности выявления возбудителей заболеваний. Одним из наиболее широко используемых методов является полимеразная цепная реакция (ПЦР), разработанная Маллисом и Фалуной в 1987 году. Этот метод позволяет с высокой точностью обнаруживать генетический материал патогенов. В дальнейшем Шаад и соавторы (2001) усовершенствовали технологию, разработав метод количественной ПЦР (qPCR), который обеспечил ещё более быструю и эффективную диагностику заболеваний.

Преимуществами молекулярных методов диагностики являются высокая чувствительность и способность обнаруживать патогены даже при их низкой концентрации. Например, в исследованиях Лопеса и соавторов (2005) было продемонстрировано, что методы ПЦР и qPCR эффективны для идентификации бактериальных болезней томатов, таких как Clavibacter michiganensis subsp. michiganensis.

Кроме того, метод петлевой изотермической амплификации (LAMP), разработанный Нотоми и соавторами (2000), выгодно отличается от традиционной ПЦР более высокой скоростью получения результатов и простотой применения в лабораторных условиях.

4. Современные технологии диагностики

В последние годы ведутся активные исследования по автоматизированной диагностике заболеваний томатов с использованием технологий искусственного интеллекта (AI) и обработки изображений. В исследовании Моханти и соавторов (2016) была разработана система автоматического распознавания признаков заболеваний на листьях томата с применением алгоритмов глубинного обучения (deep learning). Такой подход способствует раннему выявлению заболеваний и может значительно помочь фермерам в своевременном принятии мер по борьбе с патогенами.

5. Местные исследования

В Узбекистане проведён ряд научных работ, посвящённых диагностике заболеваний томатов и изучению их распространения. В частности, учёные Института генетики и экспериментальной биологии растений Академии наук Республики Узбекистан провели исследования по выявлению вирусных

заболеваний томатов и разработке методов их молекулярной диагностики. Кроме того, научно-исследовательские институты сельского хозяйства и высшие учебные заведения Узбекистана разрабатывают биологические и агрохимические меры борьбы с заболеваниями томатов.

Анализ изученной литературы показывает, что для диагностики заболеваний томатов применяются различные методы. Традиционные методы (визуальная оценка, микробиологический анализ) просты и недороги, однако отличаются низкой точностью. Серологические методы (например, ELISA) обеспечивают средний уровень точности и эффективны для диагностики бактериальных и вирусных заболеваний. Молекулярные методы диагностики (ПЦР, количественная ПЦР, LAMP) отличаются высокой точностью и быстротой получения результатов. Современные технологии, включая искусственный интеллект и анализ изображений, открывают новые возможности для автоматизации процессов диагностики и оперативной помощи фермерам.

Таким образом, для раннего выявления заболеваний томатов и эффективной борьбы с ними необходимо интегрировать традиционные, серологические и молекулярные методы диагностики. Целью данной статьи является разработка рекомендаций по эффективным подходам к выявлению фитопатогенов томата и их практическому применению.

Применение современных методов диагностики томатных заболеваний в Узбекистане позволяет своевременно выявлять инфекции, целенаправленно использовать химические средства и повышать урожайность. Серологические и молекулярные методы диагностики обеспечивают более быстрые и точные результаты по сравнению с традиционными методами. В результате фермеры и агрономы могут разрабатывать эффективные стратегии борьбы с заболеваниями и способствовать дальнейшему развитию томатоводства.

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ВЛИЯНИЕ КУЛЬТУРНОГО ТУРИЗМА НА ГОСТИНИЧНЫЙ БИЗНЕС

Аннотация. *Культурный туризм является одним из основных видов отдыха, в котором сосредоточен колоссальный потенциал регионального экономического развития, но, в первую очередь, оказывающий существенное влияние на развитие гостиничного бизнеса. В статье проанализировано влияние культурного туризма на развитие гостиничного бизнеса в Пермском крае.*

Ключевые слова: *туризм, культурный туризм, гостиничный бизнес.*

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THE IMPACT OF CULTURAL TOURISM ON THE HOTEL BUSINESS

Annotation. *Cultural tourism is one of the main types of recreation, which has a huge potential for regional economic development, but, first of all, it has a significant impact on the development of the hotel business. The article analyzes the impact of cultural tourism on the development of the hotel business in the Perm Region.*

Keywords: *tourism, cultural tourism, hotel business.*

Одним из эффективных отраслей развития территории является туризм, который представляет собой инструментом сохранения и популяризации культурного наследия, традиций и обычаев региона. Кроме того, туризм играет положительную роль в формировании валового регионального (внутреннего) продукта. Это объясняется такими основными аспектами, как создание новых рабочих мест, увеличение потребления товаров народного потребления, особенно местного производства, увеличение доходов бюджетов разных уровней [1].

Одним из ключевых видов отдыха, направленный продвижение местности, её культурного наследия и традиций, выступает культурный туризм [2].

Культурный туризм, как вид отдыха, способствует существенному духовному обогащению, расширению кругозора и формированию гармонично развитой личности. В его рамках туристы могут познакомиться с историческими творениями прошлых эпох, с народными традициями, существовавшими в определенный временной период [4].

Культурный туризм подразделяется на следующие виды (таблица 1).

Таблица 1 - Виды культурного туризма

Виды	Особенности
Культурно-исторический	В ходе путешествий изучается история страны, происходит посещение памятников и культовых мест, прослушивание исторических, тематических лекций
Культурно-событийный	В процессе занятия данным видом происходит формирование представлений о традициях прошлого, проведению праздничных торжеств и иных мероприятий, связанных со значимыми датами в истории. У путешественников возникает возможность принять активное участие в происходящем и прочувствовать все стороны существующей действительности
Культурно-религиозный	Для путешественников, предпочитающих данное направление, характерно проявление интереса к определенной религии и культуре. В рамках данного вида предусмотрено посещение религиозных лекций, церквей, костелов
Культурно-археологический	Со временем изучение археологии становится все более востребованным. С каждым годом растет интерес к археологии различных стран, что предполагает не только посещение памятников древности, но и участие в археологических экспедициях, в раскопках
Культурно-этнографический	Для данного типа характерна заинтересованность в определенной культуре и этносе, традициям и обрядам определенной категории людей.
Культурно-этнический	Заключается в изучении обычаев и образа жизни собственных предков, посещение памятных мест
Культурно-антропологический	Знакомство с развитием человека как вида, первозданным обществом, местами, где проходило становление определенных народностей.
Культурно-экологический	Знакомство с результатами взаимодействия человека с окружающим миром, посещение природных парков и иных знаменательных мест

*Составлено автором

Культурный туризм подразделяется на определенные подвиды (рис. 1).

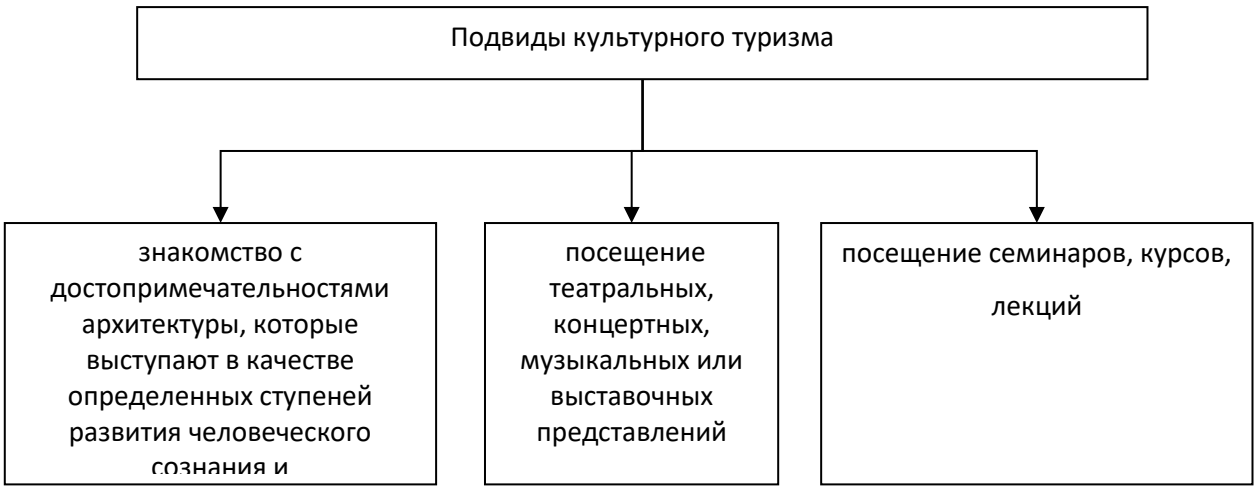

Рисунок 1 - Подвиды культурного туризма

С культурными аспектами определенной местности тесно связан гостиничный бизнес. Сущность гостиничного бизнеса заключается в удовлетворении потребностей населения (чаще всего, туристам, путешественникам) посредством сдачи им в аренду помещений на короткий период [6].

Наличие видов и подвидов культурного туризма позволяет сделать вывод о том, что он оказывает значительное влияние на гостиничный бизнес [4]. Положительное влияние культурного туризма на гостиничный бизнес проявляется в расширении спектра услуг; формировании положительного имиджа не только туристических и гостиничных организаций, но и региона в целом; развитие территории, повышение имиджа региона и культуры; стимулирование социальной активности и взаимодействия; а также развитие культурного туризма позволяет увеличить финансовый поток не только в туристические и гостиничные организации, но и в экономику региона в целом (рис. 2).

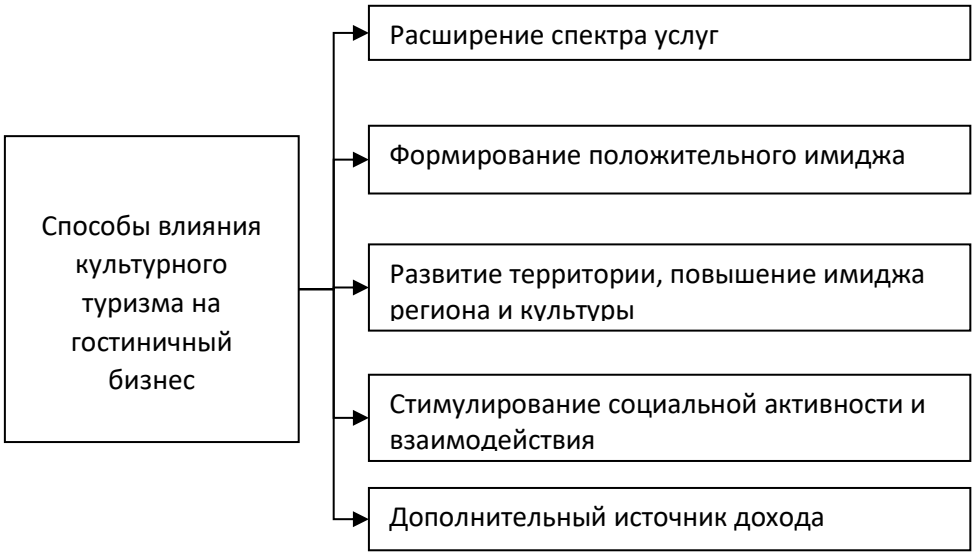

Рисунок 2 - Положительное влияние культурного туризма на гостиничный бизнес

В 2023 г. Пермский край вошел в пятерку регионов России по реализации национального проекта «Туризм и индустрия гостеприимства», проект утвержден приказом Ростуризма от 12.11.2021 N 526-Пр-21.

Кроме того, в 2023 г. проведено празднование 300-летия Перми, в связи с чем были разработаны более ста новых туристических маршрутов культурной направленности. Самыми важными были такие маршруты, как:

1. «Необычайные истории земли Пермской». Маршрут проходил через Кунгур — крупный купеческий город XIX века, получивший звание «чайной столицы Российской империи». Туристов ждали обзорная экскурсия с посещением колокольни Тихвинского храма, мастер-классы по изготовлению печатных пряников и поход по Кунгурской ледяной пещере - одному из самых известных в России памятников природы.
2. Экскурсии, посвящённые культурным памятникам города. Гиды рассказывали о театральной Перми, о жизни и творческом наследии архитекторов, писателей и художников, об интересных исторических фактах, в том числе о визитах в Пермь представителей Российского императорского дома.

Кроме того, в 2023 г. в Пермском крае проведен ряд культурных мероприятий, а именно:

1. Выставка-ярмарка «Понаехали на Арт-Пермь». В выставочном пространстве Perm Expo были представлены работы более 300 художников из четырёх стран.
2. Международный фестиваль научно-популярного кино «Future.doc». В программе мероприятий были лекции, дискуссии, выступления известных учёных и инноваторов.

3. Фестиваль татарской культуры и моды «Милли рух». В селе Уинское был проведен конкурс татарского национального костюма, модные мастер-классы и музыкальный вечер.

Все это положительно отразилось на развитии гостиничного бизнеса в регионе. В частности в Пермском крае в 2023 г. функционировало 324 организаций гостиничного бизнеса, что больше, чем в 2021 г. на 2,7%, а также 156 санаторно-курортных организаций и организаций отдыха, что больше, чем в 2021 г. на 15,56%.

Это позволило увеличить единовременную вместимость гостиниц и аналогичных средств размещения за период 2021-2023 гг. до 14763 мест или на 6,5%, также увеличить количество мест в санаторно-курортных организациях и организациях отдыха до 17947 мест или на 4,83% (таблица 2).

Таблица 2 - Динамика показателей деятельности гостиниц и аналогичных средств размещения в Пермском крае [10]

Показатели	2021 г.	2022 г.	2023 г.	2023 г. к 2021 г., %
Число гостиниц и аналогичных средств размещения, ед.	333	338	324	97,30
Единовременная вместимость гостиниц и аналогичных средств размещения, мест	13862	15677	14763	106,50
Число санаторно-курортных организаций и организаций отдыха, ед.	135	141	156	115,56
В них мест, коек	17120	17185	17947	104,83
Обслужено лиц, человек	226451	266292	279000	123,21
Естественный прирост, убыль (-) населения, человек	-19074	-11713	-10618	55,67

За 2023 г. в Пермском крае было оказано услуг гостиничного бизнеса и услуг санаторно-курортных организаций, организаций отдыха 279000 человек, что больше чем в 2021 г. на 23,21%. Это объясняется ростом туристического потока в Пермский край. Это доказывает наличие в регионе оттока населения. Важно отметить, что деятельность гостиниц оказывает положительное влияние на валовой региональный продукт (таблица 3).

Таблица 3 - Динамика удельных весов валовой добавленной стоимости сельского хозяйства и деятельности гостиниц в Пермском крае [10]

Виды деятельности	2021 г.	2022 г.	2023 г.
Валовая добавленная стоимость в текущих основных ценах - всего	100	100	100
В том числе:			
Сельское, лесное хозяйство, охота, рыболовство и рыбоводство	2,1	1,9	2,1
Деятельность гостиниц и предприятий общественного питания	0,6	0,6	0,7

Для сравнения выбрано сельское хозяйство, как одна из фундаментальных отраслей, экономики любого региона.

За анализируемый период удельный вес доходов организаций сельского хозяйства в структуре валового регионального продукта Пермского края не изменилась и составила 2,1%, то удельный вес доходов организаций гостиничного бизнеса в структуре валового регионального продукта Пермского края увеличился с 0,6% до 0,7%. Одной из причин этой ситуации является увеличение инвестиций в развитие гостиничного бизнеса на 40,42% (таблица 4).

Таблица 4 - Динамика инвестиций в основной капитал по видам экономической деятельности в Пермском крае, миллионов рублей [10]

Отрасли	2021 г.	2022 г.	2023 г.	Отклонение, (+;-) 2023 г. к 2021 г., %
Всего	241908,8	290117,5	370315,4	+53,08
Сельское, лесное хозяйство, охота, рыболовство и рыбоводство	4697,9	6238,3	4275,9	-8,92
Деятельность гостиниц и предприятий общественного питания	374,1	505,7	525,3	+40,42

Несмотря на наличие положительных способов влияния культурного туризма на гостиничный бизнес существуют и негативные факторы, тормозящие развитие гостиничный бизнес [2].

Во-первых, это износ и порча материально-технической базы. В частности, гости из некоторых культур могут небрежно относиться к чужому имуществу, что приводит к повреждению номеров.

Во-вторых, недопонимание между персоналом и гостями, то есть наличие языкового барьера и различий в туристических привычках могут вызывать конфликтные ситуации или неспособность оказать качественную услугу.

Все это ведет не только к потере клиентов и снижению уровня конкурентоспособности туристических организаций и организаций гостиничного сектора, но и к сокращению туристического потока и к ухудшению имиджа региона.

Чтобы минимизировать негативное влияние культурного туризма, организациям гостиничного сектора необходимо реализовывать кадровую политику, в основе которой должен быть принцип развития у персонала навыков межкультурного взаимодействия [7].

Кроме того, необходимо систематически анализировать потребности гостей и формировать предложения гостиничных услуг с учетом выявленных

особенностей гостей, адаптируя гостиничные услуги к их культурным особенностям.

Расширение сектора культурного туризма в регионах может стать ключевым двигателем для стимулирования экономического развития и повышения социального благосостояния в регионах [8].

Активизация посещений культурных объектов стимулирует рост в сегментах гостиничного хозяйства, ресторанного бизнеса, транспортных услуг и сферы обслуживания, что влечет за собой создание дополнительных рабочих мест и способствует усовершенствованию инфраструктурных возможностей.

Более того, стимулирование культурного туризма играет важную роль в сохранении и пропаганде культурного наследия, поддержании местных обычаев, а также в укреплении межкультурного диалога и международного сотрудничества.

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ЛИТЕРАТУРНЫЙ ОБЗОР СТАТИСТИЧЕСКИХ ПОКАЗАТЕЛЕЙ ПРИ ДИАГНОСТИКИ ТУБЕРКУЛЕЗА ПОЛОСТИ РТА

Аннотация:*На основание статистических диагностических показателей были изучены распространения туберкулеза среди населения земного шара. Полученные данные помогут улучшить ранней диагностики у больных активной формой туберкулеза и оказание им плановой стоматологической помощи.*

Ключевые слова: *микобактерия, эпидемия, антисанитария, ВИЧ, феномен Поспелова,*
туберкулёз, слизистая оболочка, гиперсаливация.

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A LITERARY REVIEW OF STATISTICAL INDICATORS IN THE DIAGNOSIS OF ORAL TUBERCULOSIS

Annotation:*On the basis of statistical diagnostic indicators, the spread of tuberculosis among the world's population was studied. The data obtained will help improve the early diagnosis of patients with active tuberculosis and their provision of planned dental care.*

Key words: *mycobacterium, epidemic, unsanitary conditions, AIDS, Pospelov phenomenon, tuberculosis, mucous membrane, hypersalivation.*

Введение: Высокая распространенность туберкулеза среди населения определяет актуальность сведений о своевременной диагностики профилактике данной патологии. Описаны клинические проявления туберкулеза в полости рта в зависимости от формы, современные методы диагностики. методы профилактике при туберкулезе а также тактика врача-стоматолога при туберкулезе полости рта. В прошлом году ВОЗ подтвердила статус туберкулеза как инфекционного убийцы номер один на планете. По оценкам ВОЗ туберкулез является одним из самых опасных инфекционных заболеваний в мире, наряду со СПИДом и гепатитом. Мужчины болеют

туберкулезом в 3,2 раза чаще женщин, при этом темпы роста заболеваемости у мужчин в 2,5 раза выше, чем женщин. Наиболее пораженными являются лица в возрасте 20–29 и 30–39 лет. При этом среди постоянного населения отмечается рост показателя заболеваемости туберкулезом, сочетанным с ВИЧ-инфекцией (2009 г. – 4,4; 2011 г. – 5,6; 2012 г. – 5,9 на 100 тыс. населения). Туберкулез является второй по значимости причиной смерти от какого-либо одного инфекционного агента, уступая лишь ВИЧ/СПИДу. В 2013 г. 9 млн человек заболели туберкулезом и 1,5 млн человек умерли от этой болезни. Проблемой остается эпидемиологическая ситуация по туберкулезу в учреждениях пенитенциарной системы. Сегодня в учреждениях содержится 35 тыс. больных туберкулезом. Вот статистика: в 2018 году показатели заболеваемости в Узбекистане составили 42,6 человека на 100 тысяч населения, а смертности - 1,6 человека. Для сравнения: в 2002-м эти данные равнялись 79,1 и 12,3 соответственно. То есть сегодня положение улучшилось. Человек восприимчив преимущественно к первым двум типам микобактерий туберкулеза. Заражение туберкулезом может быть вызвано микобактериями туберкулеза, выделяемыми не только с мокротой больного, но и с гноем, мочой, калом. В отдельных случаях заражение может произойти и от больных туберкулезом животных, в первую очередь от крупного рогатого скота. Возможное заражение туберкулезом зависит от многих причин: количества выделяемых больным микобактерий, тесноты и длительности контакта, соблюдение мер индивидуальной профилактики, предшествующего состояния здоровья, состояния защитных сил организма и др. Клинические формы туберкулеза ротовой области: Туберкулез слизистой оболочки ротовой полости: туберкулез языка; туберкулез десен; туберкулез слизистой оболочки губ и щек; туберкулез твердого и мягкого неба. Основными клинико-морфологическими формам туберкулеза слизистой оболочки рта являются инфильтративная и язвенная. Болевой симптом при различных формах туберкулезного поражения полости рта не очень выражен, зависит от локализации процесса и возникает как самостоятельное явление или при приеме пищи. В острой стадии возможно присоединение неспецифического воспаления, вызванного грибами рода Candida, также к осложнениям туберкулезной волчанки относятся рожистое поражение. Нечасто, в 1–10 % случаев, встречаются язвы, которые перерождаются в люпус карциномы. Наиболее частая локализация туберкулезной волчанки в полости рта – верхняя губа, десна и альвеолярный отросток верхней челюсти в области фронтальных зубов, твердое и мягкое нёбо. Первичный элемент поражения – специфический туберкулезный бугорок (люпома), мягкий, красного или желто-красного цвета, диаметром 1–3 мм. Бугорки располагаются группами. Они растут по периферии очага, а в центре его легко разрушаются, приводя к появлению язв с мягкими малоболезненными отечными краями. Весь очаг поражения имеет вид поверхностной язвы, покрытой ярко-красными или желто-красными чистыми или с желтоватым налетом легко кровоточащими папилломатозными разрастаниями, напоминающими малину. Костная ткань

межзубных перегородок разрушается, зубы становятся подвижными и выпадают. Пораженная губа сильно отекает, увеличивается в размере, покрывается обильными кровянисто-гнойными корками, после удаления которых обнажаются язвы. При надавливании пуговчатый зонд легко проваливается в люпому (проба с зондом, феномен Поспелова). В язвах бациллы Коха обнаруживаются очень редко, даже при многократных исследованиях. У больных с длительно текущим волчаночным процессом развиваются на месте поражения гладкие блестящие рубцы. При локализации на губе они сильно ее деформируют, что приводит к затруднению приема пищи, искажению речи. Без лечения процесс длится неопределенно долго, на рубцах могут возникнуть свежие бугорки. Реактивность к возбудителю у таких лиц понижена. Микобактерии туберкулеза, выделяясь, в значительном количестве с мокротой, внедряются в слизистую оболочку в местах травм, развиваются типичные туберкулезные бугорки, после распада которых в центре очага образуется язва. Язва обычно неглубокая, с неровными подрытыми мягкими краями, болезненная. Дно ее и края имеют зернистое строение за счет нераспавшихся бугорков, покрыты желтовато-серым налетом. Окружающие ткани отечны, вокруг язвы иногда можно обнаружить мелкие абсцессы – так называемые зерна Треля. Регионарные лимфатические узлы вначале могут не прощупываться, в дальнейшем пальпируются увеличенные, эластически плотные, болезненные. Коллективный туберкулез, или скрофулодерма, на слизистой оболочке полости рта встречается крайне редко, в основном у детей. Характерно образование узлов в глубоких слоях слизистой, спаянных с кожей или слизистой оболочкой, без выраженной воспалительной реакции. Узлы постепенно увеличиваются, размягчаются и вскрываются. После заживления язв образуются втянутые, обезображивающие рубцы. К сожалению, больные, страдающие даже тяжелыми формами туберкулеза легких, иногда не знают о своем заболевании. Туберкулезную волчанку дифференцируют от бугорков, возникающих при третичном сифилисе. Симптом проваливающегося зонда и яблочного желе при сифилисе отсутствует. Изменения по типу скрофулодермы на слизистой оболочке рта дифференцируют от сифилитической гуммы или актиномикоза. Наиболее часто, около 90 % случаев, отмечается выделение M. tuberculosis.M. bovis выявляют реже, всего в 10–15 % случаев. Выделение МБТ бычьего вида наблюдается у жителей сельской местности при алиментарном пути заражения. Выполняется диагностическая биопсия края язвы для гистологического и бактериологического исследования. При изучении биоптатов слизистой оболочки для подтверждения туберкулезной этиологии необходимо обнаружение клеток Пирогова–Лангханса. Также используется полимеразная цепная реакция (ПЦР) для выявления ДНК МБТ. Решающими в постановке диагноза являются результаты цитологического и бактериоскопического исследований. Микробиологическая диагностика: выявление микобактерий туберкулеза в мокроте (проводится троекратно); исследование промывных вод бронхов; исследование плевральной жидкости;

бронхоскопия с биопсией ткани бронха; биопсия плевры, легкого. Генетические методы: наиболее распространенным и информативным методом является метод ПЦР – полимеразной цепной реакции. Он основан на обнаружении в исследуемом материале фрагментов генетического материала (ДНК) бактерий.

Рентгенологические методы: флюорография, рентгенография, рентгеноскопия, томография. У детей основная диагностика при подозрении на туберкулез – периодическое проведение туберкулиновых проб. Туберкулезное поражение слизистой оболочки рта служит проявлением общей туберкулезной инфекции, поэтому общее лечение больных проводят в специализированных противотуберкулезных диспансерах. Стоматологическая помощь оказывается больным туберкулезом органов дыхания при строгом соблюдении мер санитарно-противоэпидемического режима. Осмотр полости рта у больных активной формой туберкулеза и оказание им плановой стоматологической помощи проводят по направлению врача-фтизиатра после проведения основного курса этиотропной терапии. Плановую помощь оказывают не ранее 2–4 месяцев от начала лечения, после прекращения выделения M. tuberculosis с мокротой.

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ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ И ИХ РОЛЬ В ПОСТРОЕНИИ СОВРЕМЕННЫХ ПЕДАГОГИЧЕСКИХ СИСТЕМ

Аннотация: *В данной статье анализируются инновационные технологии и их роль в построении современных педагогических систем. Также, особый интерес приобретает анализ проблемы профессионально-личностного развития и саморазвития спортсменов-единоборцев на основе интерактивных технологий и методов педагогического воздействия.*

Ключевые слова: *педагогических система, педагогическая воздействия, инновационная технология, профессионально-личностного развития, саморазвития, профессионального развития, принцип, инновационная обучения, метод.*

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INNOVATIVE TECHNOLOGIES AND THEIR ROLE IN BUILDING MODERN PEDAGOGICAL SYSTEMS

Abstract: *This article analyzes innovative technologies and their role in building modern pedagogical systems. Also, the analysis of the problem of professional and personal development and self-development of individual wrestlers based on interactive technologies and methods of pedagogical influence is of particular interest.*

Keywords: *pedagogical system, pedagogical influence, innovative technology, professional-personal development, self-development, professional development, principle, innovative learning, method.*

Процесс профессионально-личностного развития и саморазвития специалистов - одна из важнейших проблем современной Узбекистана. В Концепции модернизации Узбекского образования обозначено, что новое качество образования - это «ориентация образования не только на усвоение обучающимися определённой суммы знаний, но и на развитие его личности, его познавательных и созидательных способностей» [1].

Стратегическая концепция формирования облика современного специалиста определяет содержание педагогических технологий как с позиции требований знания, (фундаментальные конкретно-прикладные знания целевого практического назначения, профессионально значимые умения и навыки), так и в аспекте соответствующих средств обучения.

Возник особый «технологический» подход к построению процесса обучения в целом. Появилась так называемая технология педагогических методов, т.е. технология построения образовательного процесса. Данный экскурс позволит выявить соотношение понятий «педагогические технологии», «технологии обучения» и «инновационные технологии» и их роль в построении современных педагогических систем.

Интерес к проблеме внедрения инновационных технологий обусловлен тем, что низкая мотивация учебной деятельности до сих пор остается одной из наиболее актуальных проблем вузовского образования. В то же время, инновационные технологии обучения, которые радикально преобразуют характер взаимодействия преподавателя и обучаемых, ставят обучаемого в позицию активного субъекта учебной деятельности, организуют режим диалога между самими обучаемыми, до сих пор внедряются медленно и рассматриваются многими педагогами вуза как некая «педагогическая экзотика», которую применяют отдельные энтузиасты педагогического творчества [2].

В реальной практике заметны и другие факторы, тормозящие развитие педагогического процесса в инновационном направлении. К ним относятся, по мнению ряда авторов, инновационная некомпетентность преподавателей. Причины указанной некомпетентности преподавателей заключаются прежде всего в том, что этим знаниям и умениям ранее в системе подготовки специалистов, в том числе и преподавателей, как правило, не обучали. Признаками инновационной некомпетентности является невладение стратегиями взаимодействия со слушателями; неумение организовать командную работу (то есть правильно распределить игровые роли, четко сформулировать цели и задачи взаимодействия, сформулировать проблему, осуществить грамотно инструктаж, консультирование. У преподавателей имеются трудности управления групповым взаимодействием, межличностными и деловыми конфликтами, возникающими на занятиях. Налицо также слабые навыки руководства дискуссией, полемикой, спором и проектированием более эффективных стратегий поведения слушателей.

Информационные и инновационные технологии профессионального развития и саморазвития личности занимают промежуточное место между наукой и образовательным процессом как частью духовного производства. Каждая из педагогических технологий обучения имеет самостоятельную область знаний в системе профессиональной подготовки, связана с дидактической теорией и практикой обучения, обладает функциями проектирования и конструирования учебной деятельности. В состав технологии обучения включены как теоретические знания, так и конкретно-

прикладные: о конкретных формах образовательного процесса, совокупности методов преподавания адекватных стратегии обучения, педагогических процедурах преобразования знания, которое должны получить обучаемые.

Посредством информационных и инновационных технологий профессионального развития и саморазвития личности реализуется содержание обучения осуществляется целенаправленная совокупность педагогических процедур, в свою очередь регулирующих операционный состав деятельности обучаемых, ее структуру и развитие. То есть в процессе проектирования информационных и инновационных технологий реализуется система учебной деятельности преподавателей и обучаемых [3].

Технология обучения ориентирована на дидактическое применение научного знания, научную организацию учебного процесса с учетом эмпирических инноваций преподавателей и направлена на достижение высоких результатов в развитии личности обучаемого.

Она предполагает управление процессом обучения, что включает в себя два взаимосвязанных процесса: организацию деятельности обучаемого и контроль этой деятельности. Эти процессы непрерывно взаимодействуют: результат контроля влияет на содержание управляющих действий, т.е. изменяет дальнейшую организацию деятельности.

В соответствии с таким понимание технологии обучения и ее места в системе педагогического знания об учебной познавательной деятельности специалистов физкультурно-спортивного профиля технологическое проектирование повышение их развития можно представить на следующих уровнях: концептуальном (выбор стратегии подготовки специалистов, концепции обучения, обеспечение научного наполнения образовательного процесса, формирование учебных планов и программ) и собственно технологическом (структурирование учебного материала, выбор форм организации образовательного процесса, разработка методик проведения различных занятий, задач и заданий, процедур и приемов управления учебной деятельностью обучаемых, дидактических материалов).

Каждому элементу технологии обучения соответствует целесообразное место в целостном педагогическом процессе. Поэтому каждая технологическая процедура, каждый технологический прием занимают свое определенное место в реализации стратегии профессионально-личностного развития, в решении задач оптимизации образовательного процесса. Эти структурные составляющие педагогической технологии проявляют себя в разной степени при проектировании и реализации той или иной педагогической системы [4].

Анализ педагогической литературы указывает на то, что современные педагогические системы профессионального развития и саморазвития личности - это системы динамические, поскольку они функционируют в условиях изменчивости различных факторов внешнего окружения, а также перемены внутренних состояний системы под воздействием этих факторов. Так, в любой педагогической системе процесс профессионального развития

специалистов осуществляется в условиях видоизменения педагогических целей и возникновения новых задач, постоянного обновления научной информации, на основе которой формируются новое содержание, новые формы и методы.

В данной связи вполне правомерен вопрос о том, какой же должна быть педагогическая система, чтобы она обеспечивала профессиональное совершенствование и саморазвитие личности, на основе применения инновационных технологий и методов педагогического воздействия.

Отвечая на данный вопрос, В.А. Якунин (1998), указывает на целесообразность перевода обучаемых из созерцательной и исполнительной позиции в позицию активного субъекта профессиональной деятельности, называя это общим принципом управления педагогическими системами [5].

По его мнению, педагогические системы возникают, создаются и функционируют с определенными целями, целевые характеристики системы выступают существенными признаками ее активности. Педагогические системы с активным поведением принято называть целеустремленными. Основное отличие этих систем от других состоит в том, что они по своей природе многофункциональны. Это значит, что в случаях необходимости вся система или ее отдельные звенья могут видоизменяться для достижения разных результатов. Благодаря такой вариативности педагогические системы приобретают относительную независимость и самостоятельность [6].

При этом образовательный процесс с использованием активных методов

педагогического воздействия, по мнению В.А. Якунина (1998) [5] базируется на ряде специфических принципов. К их числу, прежде всего, можно отнести:

1. Принцип проблемности. Данный принцип реализуется, когда обучающиеся узнают новое, приобретают знания и навыки через преодоление

трудностей, создаваемых постановкой проблем.

2. Принцип «негативного опыта». Когда преподаватель так организует занятие, на котором обучающиеся учатся избегать ошибок, анализируя изучаемый материал, убеждаясь в необходимости более глубокого изучения материала.

3. Принцип «от простого к сложному». Данный принцип направлен на организацию занятий с учётом нарастающей сложности материала и применяемых методов.

4. Принцип непрерывного обновления. Суть данного принципа заключается в организации занятия, которое информативно, то есть насыщенно новым, неизвестным, привлекает внимание обучающихся, побуждает изучать тему, овладевать новыми способами учебной деятельности.

5. Принцип организации коллективной деятельности. Субъект обучения так организует занятие, когда у обучающихся нет другого выхода, как необходимость решения проблемы в группе, коллективно.

6. Принцип опережающего обучения. Преподаватель так организует занятие, когда обучающиеся овладевают в условиях обучения практическими знаниями и умениями - воплотить их в практической деятельности. У обучающегося формируется уверенность в своих силах, что обеспечивает высокий уровень результатов в будущей практической деятельности.

Существуют различные формы организации инновационного обучения:

- различные формы лекций (проблемная лекция, лекция - визуализация, лекция вдвоём, лекция с заранее запланированными ошибками, лекция-пресс-конференция, лекция - беседа, лекция - дискуссия, лекция с разбором конкретных ситуаций);
- различные техники организации групповой работы (упражнения, нацеливающие учащихся на обмен информацией по типу «мозаики», «мозговой штурм», составление семантической карты);
- различные методы (дискуссия - учебная дискуссия, направляемая дискуссия, свободная дискуссия; игровое моделирование - ролевые игры, «воображаемые ситуации»).

Все вышеперечисленные приёмы являются методами инновационного обучения.

Цикл инновационного обучения включает в себя:

- переживание и осмысление полученного опыта, основанное на взаимодействии с преподавателем, с одногруппниками, изучаемым материалом;
- рефлексия, целью которой является определение личного уровня продвижения каждого обучающегося;
- применение на практике.

Подобные занятия позволяют обучающимся выйти из привычной роли наблюдателя; создают более высокую возможность переноса знаний и опыта деятельности из учебной ситуации в реальную.

Инновационные технологии и методы педагогического воздействия позволяют обеспечить профессиональное развитие и саморазвитие личности спортсмена в процессе не только получения, но и использования знаний, способствуют развитию творческих способностей обучающихся, позволяют создать положительный микроклимат в группе, дают возможность каждому участнику образовательного учебно-тренировочного процесса вносить свой вклад в общий результат работы, формировать новый опыт через теоретическое осмысление и применение современных знаний, умений и навыков.

Сегодня, с переходом страны на новые пути развития и использовании научных достижений, время требует подготовки ответственных и высококвалифицированных спортивных специалистов, которые свободно владеют своей профессией. Они должны быть не просто компетентными и конкурентоспособными специалистами. Этапы карьеры и скорость продвижения по ее ступеням полностью зависят в современном мире не столько от усилий специалиста, сколько от того, насколько он способен

обучаться и самостоятельно повышать свое профессиональное мастерство. В этой связи особый интерес приобретает анализ проблемы профессионально-личностного развития и саморазвития спортсменов-единоборцев на основе инновационных технологий и методов педагогического воздействия.

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ЭНЕРГОСБЕРЕГАЮЩИЕ МАТЕРИАЛЫ В СТРОИТЕЛЬСТВЕ ЗДАНИЙ, ПОВЫШАЮЩИЕ ИХ ЭФФЕКТИВНОСТЬ В МЕСТНОЙ ПРАКТИКЕ

Аннотация: *Описаны пути и детали способов повышения энергоэффективности и рационального использования строящихся зданий, а также работы, проводимые в этом направлении в Узбекистане и странах мира*

Ключевые слова: *энергоэффектный дом, источники энергии, здания, теплоизоляция, расход энергии, энергетический аудит.*

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ENERGY-SAVING MATERIALS IN BUILDING CONSTRUCTION IMPROVING THEIR EFFICIENCY IN LOCAL PRACTICE

Abstract: *The ways and details of ways to increase energy efficiency and rational use of buildings under construction are described, as well as the work carried out in this direction in Uzbekistan and around the world.*

Key words: *energy efficient house, energy sources, buildings, thermal insulation, energy consumption, energy audit.*

Энергосбережение и эффективность-две важные проблемы в современном обществе. Он служит не только для экономии ресурсов, но и для сохранения окружающей среды, получения экономической выгоды и социального прогресса. Мы можем привести несколько примеров этого: в случае альтернативных источников энергии энергосбережение, в частности, позволяет развивать альтернативные источники энергии (солнечную, ветровую, биомассу и т. д.). Это, прежде всего, снижает зависимость от хранилищ ископаемой энергии и снижает ущерб окружающей среде.

Улучшение инфраструктуры позволяет развивать инфраструктуру за счет действий по энергосбережению, реализации проектов повышения энергоэффективности. Например, новые конструкции могут быть построены путем программирования энергоэффективных строительных материалов и технологий. Законодательные нормы и стимуляторы многие Штаты разрабатывают законы и нормы, направленные на повышение энергоэффективности. Это, в свою очередь, создает коммерческие возможности, способствующие энергосбережению, и создает новые рабочие

места. Первое экспериментальное энергоэффективное здание появилось в Манчестере (США) в 1974 году после мирового энергетического кризиса. Это было офисное здание, запрошенное управлением общих служб для тестирования и определения лучших технических решений для энергосбережения. Энергопотребление здания снизилось за счет эффективного использования солнечной радиации, двухслойных закрытых конструкций и компьютерного управления инженерным оборудованием здания. Реализация этого проекта заложила основу для строительства энергоэффективных зданий по всему миру. Работа по повышению энергоэффективности успешно ведется в Европе. По разным данным, в странах Западной Европы было построено от 2 до 10 тысяч таких домов. Для строительства таких энергосберегающих и энергоэффективных зданий были разработаны целевые государственные программы Дании, Германии и Финляндии.

Сегодня в нашей республике развитие образа жизни населения в сельской местности, строительство жилья по типовым проектам неразрывно связано с развитием инфраструктуры и строительством объектов инфраструктуры на селе. В соответствии с «программой строительства доступного жилья по обновленным типовым проектам в сельской местности на 2017-2021 годы», утвержденной постановлением Президента Республики Узбекистан от 21 октября 2016 года № ПП-2639, на основе типовых проектов построено большое количество жилья и квартир, а семья, нуждающаяся в улучшении жилищных условий, обеспечена жильем. Также в нашей стране сегодня уделяется внимание вопросу строительства энергоэффективных, экономичных домов как одному из важнейших факторов развития строительной отрасли, в частности, основной задачей является обогащение этими особенностями жилых домов, зданий объектов социальной сферы, возводимых на основе типовых проектов в сельской и городской местности в рамках государственных программ.

В Указе Президента Республики Узбекистан от 14 ноября 2018 года № ПФ-5577 «о дополнительных мерах по совершенствованию государственного регулирования строительной отрасли»также говорится, что с 1 января 2020 года объекты жилищного строительства будут оснащены энергоэффективным и энергосберегающим оборудованием на этапе выполнения проектно-изыскательских и строительно-монтажных работ. обязательное оснащение строго определено. В этом плане заслуживает внимания наш проект «Содействие развитию энергоэффективного сельского жилищного строительства в Узбекистане», реализуемый с 2017 года при сотрудничестве Глобального экологического фонда и министерства строительства Республики Узбекистан. Ожидается, что реализация проекта приведет к снижению потребления энергии и выбросов парниковых газов в домашних хозяйствах. В рамках проекта» Содействие развитию энергоэффективного сельского жилищного строительства в Узбекистане " в Самаркандской, Сурхандарьинской, Ферганской, Хорезмской и Бухарской областях построено

800 трехкомнатных малоуглеродистых домов. В каждом из этих домов установлены и работают фотоэлектрические станции (FES) мощностью 300 Вт для нужд освещения. А в десяти таких домах установлены водонагреватели на солнечных батареях, мощность которых достигает нагрева 200 литров воды. Однако такой уровень энергопотребления в здании сохраняется от 3 до 5 лет, а затем снова начинает расти. Энергетический скрининг необходим для выявления причин снижения энергоэффективности таким образом. Поэтому рекомендуется проводить энергетический аудит в среднем раз в четыре года. Стоит отметить, что в рамках нашего проекта « Содействие развитию энергоэффективного сельского жилищного строительства в Узбекистане» совместно с Глобальным экологическим фондом и министерством строительства Республики Узбекистан в 800 энергоэффективных домах, построенных в 2019 году, установлены фотоэлектрические станции (ФЭС) мощностью 300 Вт. Энергетический аудит будет проведен в 60 домах, отобранных среди построенных зданий, а также в простых типовых домах, построенных в рамках государственной программы в 2018 году. Такой подход позволяет сравнивать энергоэффективные дома с обычными и анализировать эффективность использования энергоэффективных и низкоуглеродных технологий при сокращении потребления тепла и электроэнергии в загородных домах.

Широкое внедрение энергетического аудита, использование возобновляемых источников энергии является одним из значительных и еще не полностью задействованных резервов. Он будет способствовать решению проблемы нехватки природного газа и нефти в будущем и, по мнению экспертов, может удвоить затраты потребителей на электроэнергию.

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ПЕРСПЕКТИВЫ ПОПУЛЯРИЗАЦИИ СТРОИТЕЛЬСТВА ЭНЕРГОЭФФЕКТИВНЫХ МАЛОЭТАЖНЫХ ДОМОВ

Аннотация: *В данной статье рассказывается о преимуществах международного сотрудничества и местных преимуществах построенного здания с целью повышения энергоэффективности зданий в сельской местности.*

Ключевые слова: *энергопотребление, теплоизоляция, дискомфорт, электроэнергия, тепловая энергия, количество.*

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PROSPECTS FOR POPULARIZING THE CONSTRUCTION OF ENERGY-EFFICIENT LOW-RISE BUILDINGS

Annotatsiya: *This article talks about the advantages of international cooperation and local advantages of the built building in order to improve the energy efficiency of buildings in rural areas.*

Key words: *energy consumption, insulation, discomfort, electricity, thermal energy, quantity.*

Сегодня малоэтажные современные жилые дома, строящиеся в сельских условиях, также становятся требованием времени для повышения энергоэффективности, так как большая часть существующих жилых зданий в Республике Узбекистан представляет собой дома, спроектированные и построенные по индивидуальным проектам малоэтажного строительства в сельских условиях. Климат нашей страны жаркий и резко континентальный. В таких климатических условиях комнатная температура даже превышает 450 С, когда температура летом в помещениях здания составляет 40-450 С. А такое состояние провоцирует появление в помещении неблагоприятных микроклиматических условий. В целях повышения энергоэффективности малоэтажных жилых домов, строящихся в климатических условиях Узбекистана, в стране с 2017 года при поддержке Программы развития ООН и Министерства строительства Республики Узбекистан, гранта Глобального экологического фонда (ГЭФ) реализуется совместный проект “Содействие развитию строительства энергоэффективных сельских жилых домов в Узбекистане”. Основной целью проекта является обеспечение сельского населения Узбекистана экологически чистыми, улучшенными и

комфортными условиями жизни. Помимо представления результатов проекта и его перспективных планов, бизнес-форум позволил оценить новые подходы и решения, обновить базу данных энергоэффективных материалов и технологий, познакомиться с инновациями в области строительных материалов, обменяться знаниями и опытом между представителями различных производственных компаний и поставщиками энергосберегающих материалов и технологий.

На примере результатов, достигнутых в этом направлении, на сходе граждан махаллы “йошлик” в городе Нурафшон Ташкентской области было начато строительство образцового наглядного дома с нулевым потреблением энергии. Город Нурафшон, 17 ноября 2022 года в махалле «Юность» города Нурафшон завершено строительство первого в Узбекистане демонстрационного дома с практически нулевым потреблением энергии. Дом построен в рамках совместного проекта Программы развития ООН «развитие энергоэффективного сельского жилищного строительства в Узбекистане», реализуемого совместно с министерством строительства Республики Узбекистан при финансовой поддержке Глобального экологического фонда (ГЭФ). Дом с практически нулевым энергопотреблением строится с использованием существующих современных технологий и строительных материалов, которые способствуют максимальной теплоизоляции наружных стен, полов и крыш. Это обеспечивает высокую теплозащиту, что значительно снижает энергопотребление по сравнению с традиционными домами. Планировка дома спроектирована с учетом максимального поглощения тепла солнечным светом зимой и минимизации тепла летом. На крыше дома установлены солнечные панели, которые производят достаточно энергии для удовлетворения всех потребностей дома. Избыточный источник энергии, полученный с помощью солнечных батарей и не потребляемый, продается в местную электросеть. В доме с почти нулевым потреблением энергии общее количество энергии, используемой в течение года, будет равно количеству электрической и тепловой энергии, производимой системами возобновляемых источников энергии. Такой результат достигается благодаря передовым архитектурно-планировочным и строительным решениям: правильной ориентации здания относительно опорных точек, повышению теплозащиты оболочки здания, повышению прочности окон и дверей, использованию затеняющих архитектурных элементов. Кроме того, для минимизации энергопотребления от сети используются следующие технологии: установлены тепловые насосы, солнечные батареи для выработки электроэнергии, солнечные коллекторы для горячей воды, высокоэффективные окна, а также гидро-и теплоизоляция строительных конструкций. Согласно последним исследованиям, стандартный энергосберегающий дом в Узбекистане потребляет в среднем 320-390 кВт/м2 в год. С другой стороны, расчетное энергопотребление дома с почти нулевым потреблением энергии составляет 60 кВтч/м2 в год, поскольку высокая энергоэффективность здания в 6 раз меньше, чем у обычного

энергоэффективного дома. Дом с почти нулевым потреблением энергии и 16-киловаттными солнечными панелями на крыше построен в 2 этажа на заднем дворе площадью 4 акра и построен с использованием современных технологий и строительных материалов, которые способствуют максимальной теплоизоляции внешних стен, полов и крыш дома. Основная функция технологии – не пропускать тепло и холод снаружи внутрь. То есть, если мы закроем дом со всех сторон, температура внутри не изменится даже на 1 градус за 1 месяц. Энергия поступает от солнечных батарей и заполняется в аккумуляторных батареях в качестве резерва. Даже при отсутствии солнца и Света дом будет питаться от этих батарей.

Данный проект имеет высокий потенциал энергосбережения с точки зрения вклада Узбекистана в сокращение выбросов парниковых газов. Широкое применение этого опыта способствует энергосбережению в условиях повышенного энергопотребления.

Узбекистан находится на пути повышения энергоэффективности экономики и перехода к рациональному потреблению природных ресурсов, подготовлена соответствующая законодательная база о стратегии перехода к «зеленой» экономике в 2019-2030 годах. Устойчивость дома, его уникальность, заключается в том, что он помогает уменьшить углеродный след за счет сокращения выбросов парниковых газов при достойной и комфортной жизни в сельской местности. Такова была цель проекта. Поэтому министерством строительства Узбекистана совместно с проектом ПРООН ведется постоянный мониторинг энергоэффективности дома, который станет образцом для дальнейшего внедрения энергосберегающих технологий при строительстве жилья в сельской местности.

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КОМПЛЕКСНЫЙ ПОДХОД К ЛЕЧЕНИЮ КАРИЕСА ПОСТОЯННЫХ ЗУБОВ С РАЗНОЙ СТЕПЕНЬЮ ЭМАЛЕВОЙ РЕЗИСТЕНТНОСТИ

Аннотация: *Доказано, что наиболее актуальной проблемой в стоматологии является лечение кариеса и патологии твердых тканей зубов, так как своевременное и качественное их лечение способствуют снижению уровня развития вторичного кариеса и его осложнений. Чаще всего из всех кариесологических мероприятий терапевтического характера осуществляются по поводу вторичного и рецидивного кариеса, которые занимают больше времени на лечение этих зубов у врача-стоматолога. Исходя из этого, проблема поиска современных технологий препарирования кариозных полостей*

остаётся актуальной в настоящее время. Цель данного исследования ***у****совершенствовать методы лечения кариеса постоянных зубов с разной степенью эмалевой резистентности.*

Материал и методы исследования: *Обследовано 20 больных с вторичным и рецидивирующим кариесом. Таким образом, атравматично-инвазивный метод препарирования кариозной полости, ремтерапия Глуфорэдом, отсроченное пломбирование с профилактикой вторичного кариеса, с последующим пломбированием СИЦ Argion Molar AC, содержащим активные ионы фтора, оказывают кариесопрофилактическое и реминерализующее воздействие в течение 24 месяца наблюдения.*

Ключевые слова*:кариес постоянных зубов, резистентность эмали, комплексный подход* **,** *реминерализация эмали.*

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INTEGRATED APPROACH TO THE TREATMENT OF PERMANENT TEETH CARIES WITH DIFFERENT DEGREES OF ENAMEL RESISTANCE

Annotation:*It has been proven that the most urgent problem in dentistry is the treatment of caries and pathology of hard dental tissues, since their timely and*

high-quality treatment helps to reduce the level of development of secondary caries and its complications. Most often, of all cariesological measures of a therapeutic nature, they are carried out for secondary and recurrent caries, which take more time for the treatment of these teeth by a dentist. Based on this, the problem of finding modern technologies for the preparation of carious cavities remains relevant at the present time. The purpose of this study is to improve the methods of treatment of caries in permanent teeth with varying degrees of enamel resistance. Material and methods of research: 20 patients with secondary and recurrent caries were examined. Thus, the atraumatic-invasive method of carious cavity preparation, Glufored remediation, delayed filling with prevention of secondary caries, followed by filling with Argion Molar AC CIC containing active fluorine ions, have a caries-preventive and remineralizing effect

During 24 months of observation.

Keywords: *caries of permanent teeth, enamel resistance, integrated approach. Enamel remineralization.*

Введение: Доказано, что наиболее актуальной проблемой в стоматологии является лечение кариеса и патологии твердых тканей зубов, так как своевременное и качественное их лечение способствуют снижению уровня развития вторичного кариеса и его осложнений. По данным некоторых исследователей, ряд факторов, имеющих связь со свойствами эмалевой резистентностью и восстановительных реставраций, влияет на краевое прилегание пломб, её состояние в развитии вторичного и рецидивирующего кариеса. Учитывая выше сказанное, основными методами профилактики вторичного кариеса остаются принципы препарирования кариозных полостей по Блэку, а также технологии восстановительной реставрации зубов, выбор пломбировочного материала и соблюдение гигиены межзубных промежутков. Исходя из этого, проблема поиска современных технологий препарирования кариозных полостей остаётся актуальной в настоящее время.

Цель: Усовершенствовать методы лечения кариеса постоянных зубов с разной степенью эмалевой резистентности.

Материал и методы исследования: Обследовано 20 больных с вторичным и рецидивирующим кариесом. Для этого был использован тест эмалевой резистентности (ТЭР-тест), с целью оценки состояния эмалевой поверхности к кислотному воздействию. Тест был проведен следующим образом: на центральный резец верхней челюсти, после очищения от мягкого зубного налёта и высушивания ватным тампоном, на середину вестибулярной поверхности диаметром 1,5 мм на 2-3 секунды с

пипеткой была нанесена протравочная кислота. Среди пациентов до лечения кариеса зубов были проведены беседы по поводу факторов риска возникновения патологии кариеса зубов, затем осуществлена профессиональная гигиена полости рта в полном объеме. Среди обследованного контингента малоинвазивные восстановительные методы

лечения проводились под контролем кариес-детектора раствором 0,5-1% основного фуксина в

пропиленгликоле. С помощью кариес-детектора осуществляется щадящий способ удаления только нежизнеспособных тканей кариозного очага и максимальное сохранение тканей зуба, которые способны к реминерализации после глубокого фторирования.

В зависимости от уровня эмалевой резистентности нами было проведено соответствующее лечение кариозного очага. Так, пациентам с высокой (от 1 до 3 баллов окрашивания) и умеренной (4-5 баллов) эмалевой резистентности проведено традиционное лечение кариеса зубов. Пациентам с низкой (6-7 баллов) и очень низкой (более 8 баллов) кариесрезистентностью при лечении 16 зубов по поводу кариеса (10 моляр и 6 премоляр) с целью реминерализующей терапии был использован метод глубокого фторирования обработанной эмали и дентина препаратом Глуфторэд («ВладМива», Белгород). Затем таким же способом проводили туширование второй жидкостью с последующим высушиванием струей воздуха. Данный метод повторяли 2-3 раза с интервалом в 1 неделю. В течение этого времени сформированная обработанная кариозная полость была запломбирована дентином. Через 2-3 недели после окончания курса реминерализующей терапии методом глубокого фторирования, временная пломба заменялась постоянной- стеклоиономерной (Argion Molar AC). Выбор данного препарата при восстановительно-реставрационной терапии кариозной полости, объясняется тем, что современный стеклоиономерный цемент (Argion Molar AC) имеет высокое содержание серебра и выделяющий при этом активные ионы фтора, обладают максимальным противокариозным действием. Состояние постоянных зубов у пациентов оценивалось через 6, 12 и 24 месяца.

Результаты и их обсуждение. Установлено, что из 20 обследованных пациентов только у 3 (15%) установлен высокий уровень эмалевой резистентности, остальные 17 (85%) имели умеренные, низкие и очень низкие уровни кариесрезистентности. Так у 4 (20%) обследованных был выявлен умеренный уровень эмалевой резистентности, у 6 (30%) - низкий и у 7-(35%) очень низкий уровень резистентности. Как следует из выше сказанных данных, у большинства обследованных пациентов определена низкая или очень низкая устойчивость эмали к кислотному воздействию (65%), что и определяет развитие множественного кариеса и требует различный подход в зависимости от уровня эмалевой резистентности к лечению и профилактике кариеса зубов. Лечебно-профилактический метод кариесологического лечения реализовали в 3 направлениях:

1.профессиональная гигиена полости рта с реминерализующей терапией, малоинвазивное препарирование и пломбирование СИЦ материалом;

2. Местная патогенетическая ремтерапия препаратом Глуфорэд с целью укрепления стенок и дна кариозного дефекта, профилактика вторичного и

рецидивирующего кариеса и в отдаленные сроки наложение постоянной пломбы;

3. У лиц с низкой и очень низкой кариесорезистентностью общая патогенетическая терапия, медикаментозное лечение (препараты кальция, комплекс витаминов и пробиотики) направленная на повышение неспецифической резистентности организма и её стойкости к воздействию общих неблагоприятных факторов.

После наложения СИЦ материала в основной группе через 6-12 мес. не наблюдалось наличие вторичного кариеса у пролеченных зубов, а спустя 24 мес. кариесологические осложнения в виде вторичного кариеса наблюдалось только у 12,5±1,2% случаев. Через 24 месяца наблюдения значение исследуемых показателей составило, соответственно, 25,6±2,2% и 4,2 раза, по сравнению с первоначальным сроком (6 мес.) наблюдения. Нарушение краевого прилегания в этих же сроках наблюдения составило 1,2±0,72%, 7,3±1,2% и 20,2±1,7% соответственно, через 6 месяцев, спустя 12 месяцев и через 24 месяца, увеличиваясь в 5 и 14 раз в последующие сроки наблюдения.

Заключение. Таким образом, атравматично-инвазивный метод препарирования кариозной полости, ремтерапия Глуфорэдом, отсроченное пломбирование с профилактикой вторичного кариеса, с последующим пломбированием СИЦ Argion Molar AC, содержащим активные ионы фтора, оказывают кариесопрофилактическое и реминерализующее воздействие в течение 24 месяца наблюдения. Такой комплексный подход к лечению кариеса постоянных зубов оказался достоверно эффективным у пациентов с низкой и очень низкой эмалевой резистентностью.

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ДИЗАЙН — ЗАМОНАВИЙ ЭҲТИЁЖЛАРНИНГ АСОСИЙ ОМИЛЛАРИДАН БИРИ

***Аннотация**: Ушбу мақолада, дизайн, нарсаларни яратиш ва истеъмол қилиш жараёнида инсон учун энг қулай шароитларни таъминлай оладиган яхлит эстетик аҳамиятга молик буюмлар муҳитини вужудга келтириши ҳамда инсон эстетик эҳтиёжларини қондиришдаги ўрни ва аҳамияти кўрсатилган.*

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DESIGN IS ONE OF THE MAIN FACTORS IN SATISFYING MODERN NEEDS

***Abstract:** The article shows the role and importance of design in creating an environment of integral aesthetic objects that can provide the most comfortable conditions for a person in the process of creating and consuming things, as well as in satisfying the aesthetic needs of a person.*

***Key words**: Design, material culture, science and technology, beauty, technical creativity, personality, society, aesthetics, designer.*

Ҳозирги замон фан-техника тараққиёти маданиятнинг барча жабҳаларига, шу жумладан моддий ва маънавий маданият туташган ерда вужудга келган бадиий маданиятга ҳам ўзгаришлар киритди. Технологик жараёнлари реал воқеликка янгича ёндашувларни, бадиий ижодиётнинг янги шаклларини вужудга келтирди, маданий қадриятларни тарқатиш, сақлаш, кўпайтиришнинг имкониятларини яратди. Барча предметлардаги бадиийлик ва техник ижодкорликнинг синтезлашуви, ўзида гўзалликни англаш, юксак эстетик дидни намоён қилишда қўлланиладиган моддий маданиятнинг янги соҳаларининг пайдо бўлишига олиб келди.

Бадиийлик ва техникавийлик бирлиги шахс ва жамият маънавий-эстетик эҳтиёжларини қондиришнинг янги йўналишларига эҳтиёжнинг юзага келиши, маданиятнинг моддий-техник ва бадиий тизимости муносабатларидаги диалектик зиддиятлар туфайли пайдо бўлади. Хусусан, технологик тараққиёт ва шахс эстетик эҳтиёжларини қондириши ўртасида номутаносиблик кузатилмоқда. Яъни, кундалик эстетик эҳтиёжларнинг қондирилиши бизни қуршаб олган муҳитни маданий ташкил этишдан орқада қолмоқда.

Содир бўлган вазиятдан чиқиш йўлидаги изланишлар ишлаб чиқаришни эстетиклаштириш муаммоларини ечиш зарурияти “Дизайн”-санъат ва техникани уйғунлаштирувчи янги йўналишнинг яратилишига олиб келди. Дизайн ўз тараққиёти жараёнида инсонни қуршаб турган предмет-буюмлар муҳитини, ишлаб чиқаришни умуман инсон фаолиятининг барча соҳаларини қамраб олди. Шундай қилиб, дизайн, техник эстетиканинг нисбатан мустақил соҳасидан, муҳитни маданий ташкил этувчи универсал воситага айланди.

Дизайн гўзаллик категорияси билан хамкорликда тараққий этиб боради. Холбуки, буюмни бадиий лойихалаштиришда унинг шакли билан мазмуни ҳамоҳанг, мос бўлиши керак. Дизайндаги эстетик талаб шахснинг моддий эҳтиёжи билан бирга моддий эҳтиёжини ҳам қондира олгандагина ўзида гўзалликни намоён эттиради. Дархақиқат, дизайн нафақат техника саноатининг маҳсулотига нисбатан қўлланилади, балки ўзида бунданда кенг қамровли хусусиятларни ҳам акс эттиради.

Эркин рақобатга асосланган бозор иқтисодиёти муносабатлари шароитида дизайн маҳсулот сифатини оширишнинг таъсирчан воситаси бўлиб, ўзида илмий изланишларнинг энг сўнгги ютуқларини юксак техник-иқтисодий кўрсаткичларни ифода этиши ва истеъмолчиларнинг эстетик талабларига жавоб бериши билан жаҳон бозорида рақобатбардошликни таъминламоқда.

Хозирги кунда жамият тараққиёти жараёнида инсоннинг атроф-муҳитга бўлган эстетик муносабатлари ўзгариб бормоқда. Яъни, инсонда ижтимоий муносабатларнинг хусусиятлари, ҳаёт тарзининг йўналишларига мос эстетик қарашлар тизимини шакллантирмоқда. Бунда ишлаб чиқариш муҳитининг эстетик жихатларини вужудга келтириш, унга «маънавий кадрият» макомини бериш дизайн (техника эстетикаси) га оид расм-чизмалар, моделлар, безаклар воситасида ҳам амалга оширилади.

Техник тараққиётнинг инсоний мезонлари нафақат ижтимоий фанлар, балки улар билан алоқадорликда жуда кўп табиий ва техник фанлар томонидан ҳам ўрганилади. Уларнинг ўзаро алоқадорликлари дизайнда ифода топади. Дизайн эса буюм-ашёлар муҳитини инсонпарварлаштиришга қаратилган тарзда инсон турмуш тарзини такомиллаштириб бойитишнинг шартларидан бири бўлиб хизмат қилади. Дизайн моддий ишлаб чикариш мухитини эстетик кайта куришга, уни инсоннинг манфаатлари ва эхтиёжларига мос келтиришга хизмат килади.

Бугунги кунда дизайннинг инсонпарварлик мазмуни худди шу мослашувчи-ижодийлик йўналишида муҳим аҳамият касб этиб, буюм-ашё оламининг инсон билан уйғунлашиб муҳитнинг яхлитлигига эришиш зарурлигини кун тартибига қўймоқда. Жумладан, мамлакатимизда бунёд этилаётган муҳташам бинолар, иншоотларнинг миллий меъморчилик анъаналари билан Оврўпа меъморчилик анъаналарининг уйғунлигига асосланади. «Интер Континентал» меҳмонхоналари, «Миллий Банк», «Марказий Банк», «Тошкент шаҳар ҳокимияти», Олий Мажлис Қонунчилик палатаси ва Сенат биноси, «Ўзбек Миллий театри», «Ўзбек Давлат Консерваторияси» бинолари, «Юнусобод», «Жар» соғломлаштириш мажмуалари, Талабалар турар жойи, Алишер Навоий номидаги Миллий боғ ва бошқа иншоотлар шулар жумласидандир.

Бу гўзалликка бўлган шундай бир интилишки, инсоннинг барча улуғвор интилишларини намоён қилувчи, том маънодаги инсон эркинлиги сари олиб борувчи йўлдир. Ф.Шиллер ўзининг «Инсонни эстетик тарбиялаш ҳақидаги мактублари» даёқ икки ўта муҳим тезисни олға сурган: биринчиси-инсон «зарурийлик ишини эркин танловга асосланган ишга ва жисмоний эҳтиёжни маънавий эҳтиёжга айлантириши мумкин»; иккинчиси-«эркинлик сари йўл фақат гўзаллик орқали боради».[103] Шу боис турмуш буюмларидаги гўзаллик, бу предметнинг вазифасига шунчаки қилинган қўшимча эмас, балки бу шахс ва умуман жамиятнинг эркинликка йўналтирилган ўзлигининг намоён бўлиши ҳамдир.

Жисмоний заруриятдан маънавийга, ундан эса эстетик эҳтиёжларга ўтиш, шахснинг баркамоллик сари доимий интилишининг намоён бўлиши сифатида, бадиийлик ва техникавийлик уйғунлиги муаммосини ечади. Хусусан у турмуш эстетикасида юксак маънавий-эстетик маданиятга эга бўлган ҳақиқий демократик жамиятни қуришнинг стратегик мақсади сифатида намоён бўлади.

Дизайннинг заруриятга айланиши нафақат замонавий илмий техникавий равнақка, балки оммавий ишлаб чиқариш ва оммавий маданият даражасининг юксаклигига ҳам боғлиқ.

Дизайн - бу зиддият ифодасининг шакли бўлиб, буюм-ашёлар ўзида икки қарама-қарши хоссалар: гўзаллик ва фойдалиликни бирлаштиради.

Инсонннинг бадиий-техник фаолияти хусусиятлари ва қонуниятларини очиб бериш техника эстетикасининг вазифасидир. Техника эстетикаси ўзининг амалий жиҳатлари билан бевосита дизайннинг таркибий қисмига айланиб кетади. Дизайн дунёқарашга тааллуқли, мавжуд умумий эстетик назария билан боғлиқ. Дизайннинг махсус фаолият тури сифатидаги хусусиятлари; дизайн ва санъатнинг ўзаро муносабатлари; саноат маҳсулотлари ишлаб чиқаришда бадиий ижод иштироки, улар ўртасидаги умумийлик ва фарқлар; техниканинг эстетик жиҳозланиши ва эстетик

[103] Шиллер Ф. Собр. соч. Москва. 1957.т.6.с.255,254.

қиймати каби муаммолар таҳлили эстетик фаолиятда кўп самара бериши мумкин.

Дизайнда муҳандислик, илмий ва бадиий фаолият қоришиқ ҳолда намоён бўлади. Дизайн моддий ишлаб чиқариш муҳитини эстетик қайта қуриш, уни инсон манфаат ва эҳтиёжларига мослаштиришга хизмат қилади.

Ишлаб чиқариш билан истеъмол, ишлаб чиқарувчи билан истеъмолчи ўртасидаги ўзаро муносабатларни уйғунлаштириб туриш ҳам дизайнернинг вазифасига киради. Дизайнер, ишлаб чиқариш соҳасида имкон қадар истеъмолчи манфаатлари томонида туради. Истеъмолчи дид, савиясининг ошиб боришида дизайнернинг эстетик маданияти, эстетик диди даражаси ҳал қилувчи аҳамият касб этади.

Дизайнер лойихалаштираётган нарсалар, улар истеъмол буюмлари ёки техник қурилмалар бўлишидан қатъий назар, нимага хизмат қилиши, ранги ва бошқа жиҳатларини ўзаро мувофиқлаштиради. Бу билан у нарсаларни яратиш ва истеъмол қилиш жараёнида инсон учун энг қулай шароитларни таъминлай оладиган яхлит эстетик аҳамиятга молик буюмлар муҳитини вужудга келтиради.

Инсон фаолияти билан яратилган эстетик қадриятлар, агар маҳсулотларда шакл ҳамоҳанглигидан теранроқ инсон ҳаётининг ижтимоий аҳамиятли пайтлари сезилмаса, агар мазкур маҳсулот аниқ ғоявий хоссага эга бўлмаса, бадиийлик касб эта олмайди. Ҳозирги кунда архитектурадаги хукмрон эстетик йўналишлар боғ-паркчилик санъатида ҳам ўз ифодасини топмоқда. Ландшафт архитектурасидан оқилона фойдаланиш, яшил майдончалар ва фавворларни кўпайтириш нафақат пойтахтимиз, балки юртимизнинг бошқа вилоятлари жамоли ва ободончилигини оширмоқда.

Дизайнернинг ижоди буюм-ашё шароитлари, ижтимоий ва шахсий ҳаётни инсонпарварлаштириш талабларига буйсундирилган бўлиб, кишилик жамияти тарихи давомида яратилган, инсон ва буюм-ашё дунё ўртасидаги ўзаро алоқадорликнинг ижтимоий-маданий тасаввурлари мажмуаси устига қурилгандир.

Дизайннинг бадиий конструкциялаш тарзида талқин қилиш шахсий маънода ҳам, ижтимоий йўналишда ҳам янги имкониятлар очиб беради ва янги эҳтиёжларни шакллантиради. Масалан, фитодизайн турли хидларни бир-бири билан алмаштириш орқали нафосат туйғуси шакллантиради, биодизайн турли жонлилар масалан, уй ҳайвонларига ўхшаган работлар яратишга қаратилган, экодизайн инсонни ўз фаолияти маҳсулотларининг зарарли таъсирларидан, табиий офатлардан ҳимоялайдиган фойдали сунъий муҳит яратади ва ш.к.

Шундай қилиб, дизайн замонавий эҳтиёжларнинг шаклланиши ва ривожланишига бевосита таъсир кўрсатувчи муҳим омил ҳисобланади. У нафақат маҳсулотлар ва хизматларнинг ташқи кўринишини яратиш, балки уларнинг функционаллиги, қулайлиги ва эҳтиёжларга мослигини таъминлаш воситасидир. Замонавий дунёда дизайн фақатгина эстетик тузилиш эмас, балки жамиятнинг янги талабларини қондиришда стратегик восита сифатида

намоён бўлмоқда. Шундай экан, дизайнга инновацион ёндашув орқали нафақат янги маҳсулотлар яратилади, балки жамиятнинг янги эҳтиёжлари ҳам шакллантирилади ва қондирилади. Бу эса дизайннинг аҳамиятини янада оширади ва унинг келажакдаги ролини янада мустаҳкамлайди.

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ФИЗИОЛОГИЧЕСКИЕ АСПЕКТЫ АДАПТАЦИИ ДЕТЕЙ, ПРОЖИВАЮЩИХ В ПРИАРАЛЬЕ, К УСЛОВИЯМ ШКОЛЬНОГО ОБУЧЕНИЯ

Аннотация*:В статье рассматриваются физиологические особенности адаптации детей, проживающих в экологически неблагополучном регионе Приаралья, к условиям школьного обучения. Особое внимание уделяется изменениям в деятельности сердечно-сосудистой, дыхательной и нервной систем, а также уровню физической и умственной работоспособности детей.*

Ключевые слова: *регион, Приаралья, проблема, аспект, процесс, статус, организм.*

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PHYSIOLOGICAL ASPECTS OF ADAPTATION OF CHILDREN LIVING IN THE ARAL SEA REGION TO THE CONDITIONS OF SCHOOL EDUCATION

Abstract:*The article examines the physiological features of adaptation of children living in the ecologically unfavorable region of the Aral Sea region to the conditions of school education. Particular attention is paid to changes in the activity of the cardiovascular, respiratory and nervous systems, as well as the level of physical and mental performance of children.*

Key words: *region, Aral Sea region, problem, aspect, process, status, organism.*

Экологическая ситуация в регионе Приаралья представляет собой серьезную медико-социальную проблему, оказывающую многогранное негативное влияние на здоровье населения, особенно на растущий детский организм. Условия проживания в данном регионе, характеризующиеся засушливым климатом, пыльными бурями, дефицитом питьевой воды,

загрязненной почвой и воздухом, накладывают особый отпечаток на физиологическое развитие и адаптационные возможности детей, поступающих в школу. Изучение физиологических аспектов адаптации этих детей к условиям школьного обучения является актуальной задачей, направленной на разработку научно обоснованных подходов к сохранению их здоровья и повышению эффективности образовательного процесса.

Длительное воздействие неблагоприятных экологических факторов приводит к формированию ряда особенностей в физиологическом статусе детей, проживающих в Приаралье:

- Повышенная запыленность и загрязнение воздуха химическими веществами способствуют развитию хронических заболеваний дыхательных путей, таких как бронхиальная астма, хронический бронхит, аллергические риниты. Это может проявляться в снижении показателей внешнего дыхания, затруднении носового дыхания, частых респираторных заболеваниях, что негативно сказывается на насыщении крови кислородом и общем энергетическом обеспечении организма, необходимом для учебной деятельности.
- : Недостаток качественной питьевой воды и дисбаланс микроэлементов в окружающей среде могут способствовать развитию ранних признаков сердечно-сосудистых заболеваний, таких как вегетососудистая дистония, нарушения ритма сердца, колебания артериального давления. Это может проявляться в быстрой утомляемости, головных болях, снижении физической выносливости, что затрудняет адаптацию к учебным нагрузкам.
- Загрязнение почвы и воды может приводить к частым заболеваниям желудочно-кишечного тракта, нарушениям микрофлоры кишечника, снижению всасывания питательных веществ. Дефицит витаминов и микроэлементов, обусловленный как экологическими факторами, так и особенностями питания, может негативно влиять на когнитивные функции и общее развитие ребенка.
- Хроническое воздействие стрессовых факторов окружающей среды может приводить к дисфункции иммунной системы, снижению общей сопротивляемости организма к инфекционным заболеваниям. Часто болеющие дети испытывают трудности с посещением школы и усвоением учебного материала.
- Постоянный психоэмоциональный стресс, связанный с неблагоприятной экологической ситуацией и социально-экономическими проблемами региона, может способствовать развитию эмоциональной лабильности, повышенной тревожности, нарушений сна и внимания у детей. Эти факторы существенно осложняют процесс адаптации к школьному обучению, требующему усидчивости, концентрации и эмоциональной устойчивости.

Начало школьного обучения является важным этапом в жизни ребенка, связанным с значительными изменениями в образе жизни, режиме дня,

характере деятельности и социальных взаимодействиях. Для детей, проживающих в Приаралье и имеющих определенные физиологические особенности, процесс адаптации может протекать более сложно и длительно.

Дети с ослабленным здоровьем и функциональными нарушениями могут медленнее привыкать к новому режиму дня, учебным нагрузкам, требованиям дисциплины.

Сниженная физическая выносливость и нарушения в работе сердечно-сосудистой и дыхательной систем могут приводить к быстрой утомляемости, снижению работоспособности в течение учебного дня. Недостаточное кислородное обеспечение мозга, дефицит микроэлементов и нервно-психические расстройства могут негативно влиять на когнитивные функции, необходимые для успешного обучения. Ослабленный иммунитет делает детей более восприимчивыми к инфекционным заболеваниям, что приводит к пропускам занятий и отставанию в учебе. Повышенная тревожность и эмоциональная лабильность могут проявляться в трудностях с социальной адаптацией в школьном коллективе, нарушениях поведения. Для успешной адаптации детей, проживающих в Приаралье, к условиям школьного обучения необходим комплексный подход, включающий медицинские, педагогические и социально-психологические мероприятия:

- ✓ Проведение регулярных медицинских осмотров с целью выявления факторов риска и ранних признаков заболеваний, разработка индивидуальных программ оздоровления и реабилитации.
- ✓ Соблюдение рационального режима дня с достаточным временем для сна и отдыха, дозированное увеличение учебной нагрузки, организация динамических пауз и физкультминуток на уроках.
- ✓ обеспечение качественным питанием и питьевым режимом: Организация сбалансированного питания с достаточным содержанием витаминов и микроэлементов, обеспечение доступа к чистой питьевой воде.
- ✓ Учет индивидуальных особенностей и возможностей каждого ребенка, применение здоровьесберегающих технологий обучения, создание доброжелательной и поддерживающей атмосферы в классе.
- ✓ Оказание своевременной психологической помощи детям и их родителям, направленной на снижение тревожности, повышение уверенности в себе и формирование позитивного отношения к учебе.
- ✓ Повышение осведомленности детей и родителей о влиянии экологических факторов на здоровье и мерах профилактики.
- ✓ социальная поддержка: Оказание помощи семьям, находящимся в трудной жизненной ситуации, обеспечение равных возможностей для получения качественного образования.

Таким образом, физиологические аспекты адаптации детей, проживающих в экологически неблагоприятном регионе Приаралья, к

условиям школьного обучения представляют собой сложную и многогранную проблему. Учет особенностей их физического состояния, разработка и внедрение комплексных медико-педагогических и социально-психологических мероприятий являются необходимым условием для сохранения здоровья, повышения успеваемости и обеспечения полноценного развития подрастающего поколения в данном регионе. Дальнейшие научные исследования в этой области будут способствовать разработке более эффективных стратегий поддержки и адаптации детей к школьной среде в условиях экологического неблагополучия.

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АНАЛИЗ ВОЗДЕЙСТВИЯ УРБАНИЗАЦИИ НА ОКРУЖАЮЩУЮ СРЕДУ (НА ПРИМЕРЕ САМАРКАНДСКОЙ ОБЛАСТИ)

Аннотация: *В данной статье анализируется влияние урбанизированных территорий Самаркандской области на ухудшение состояния окружающей среды, загрязнение воздуха и воды, потерю зеленых насаждений.*

Ключевые слова: *Урбанизация, воздействие на окружающую среду, устойчивое городское планирование, загрязнение воздуха, водные ресурсы, устойчивое развитие, зеленая инфраструктура, изменение землепользования, экологический баланс.*

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ANALYSIS OF THE IMPACT OF URBANIZATION ON THE ENVIRONMENT (ON THE EXAMPLE OF SAMARKAND REGION)

Abstract: *This article analyzes the impact of urbanized territories of the Samarkand region on environmental degradation, air and water pollution, and loss of green spaces.*

Keywords: *Urbanization, environmental impact, sustainable urban planning, air pollution, water resources, sustainable development, green infrastructure, land use change, ecological balance.*

Актуальность. Урбанизация, определяемая как демографический сдвиг от сельской к городской жизни, представляет собой многогранный процесс, на который влияют экономические, социальные и инфраструктурные факторы. Траектория урбанизации в Узбекистане уникальна: в 1990–2014 годах рост городского населения отставал от роста сельского населения, что привело к снижению уровня урбанизации с 40,17% до 36,27%.

Если взять Самаркандскую область, то эта территория служит важным примером городского развития страны. В этой провинции, площадь которой составляет около 16 773 квадратных километров, по состоянию на 2022 год проживало 4 031 324 человека, из которых 63% проживали в сельской местности. В областном центре Самарканде наблюдается значительный рост: численность населения увеличилась с 167 961 человека в 1950 году до 624 790 человек в 2024 году. Урбанизация является важным фактором экономического развития и социального прогресса, обеспечивая рост

инфраструктуры в регионах, улучшение условий жизни населения и развитие промышленности. Однако этот процесс имеет серьезные последствия для окружающей среды, включая загрязнение воздуха и воды, вырубку лесов и изменение климата. За последние десятилетия урбанизация в Самаркандской области ускорилась, что привело к увеличению нагрузки на использование природных ресурсов. Самарканд — один из крупнейших и наиболее исторических городов Узбекистана, и в последние годы процесс урбанизации здесь ускорился из-за роста населения и экономического роста. В регионе быстрыми темпами продолжается строительство новых жилых массивов, промышленных зон и транспортной инфраструктуры. Это увеличивает нагрузку на природные ресурсы и экологическую среду. [1]

Результаты исследования: Рост населения и расширение городов По состоянию на 1 января 2025 года численность населения Самаркандской области достигла приблизительно 4 118 229 человек, что на 2% больше по сравнению с предыдущим годом. Этот рост соответствует общенациональной тенденции, где общая численность населения Узбекистана составляет 37,543 млн. человек, что указывает на ежегодный темп прироста в 2%. Население Самарканда неуклонно растет. В 2021 году численность населения города составила 551 700 человек. Прогнозы показывают, что к 2025 году численность населения достигнет приблизительно 635 000 человек, а ежегодный темп прироста составит 1,6%. [4]

На основании этих цифр можно прогнозировать, что к 2035 году население Самарканда может достичь 727 тысяч человек, что составит значительную долю населения региона. [2]

Положительное влияние урбанизации на экологию Самарканда:

1. Развитие инфраструктуры и внедрение экологических технологий.

Урбанизация стимулирует модернизацию городской инфраструктуры. Строительство дорог, мостов и современных жилых комплексов в Самарканде способствует оптимизации потребления энергии. Кроме того, использование солнечных панелей, энергосберегающих светильников и экологически чистых строительных материалов помогает снизить нагрузку на окружающую среду.

2. Улучшение систем управления отходами и очистки воды.

Урбанизация создает возможности для улучшения систем сбора и переработки отходов. В Самарканде модернизируется система управления твердыми бытовыми отходами, реализуются проекты по сортировке и переработке отходов. Также введены в эксплуатацию современные очистные сооружения, которые позволят снизить экологические риски, связанные с промышленными и бытовыми сточными водами.

3. Расширение зеленых зон.

В рамках инициативы «Зеленый Самарканд» реализуется ряд проектов по увеличению площади зеленых насаждений в городе и области Самарканд. [6]

Негативное влияние урбанизации на экологию Самарканда:

1. Загрязнение воздуха и его последствия.

Рост числа автомобилей и развитие промышленности в Самарканде приводят к увеличению загрязнения воздуха. Окись углерода (CO) и вредные твердые частицы (PM), выбрасываемые транспортными средствами, приводят к ухудшению качества воздуха. В результате растет число респираторных заболеваний и других проблем со здоровьем. Парниковые газы, выбрасываемые в результате промышленной и строительной деятельности, также способствуют глобальному изменению климата. [5]

2. Истощение и загрязнение водных ресурсов.

Урбанизация увеличивает потребление воды, оказывая давление на реку Зарафшан и источники подземных вод. Рост населения и расширение промышленных предприятий приводят к нехватке питьевой воды. Кроме того, сброс промышленных отходов и сточных вод в реки приводит к загрязнению воды, нанося серьезный ущерб водным экосистемам.

3. Сельскохозяйственные земли и утрата биоразнообразия.

Использование плодородных земель, отведенных под сельское хозяйство, сокращается в результате расширения городских и промышленных зон. Это приводит к сокращению местного производства продуктов питания и увеличению зависимости от импортной продукции. Кроме того, численность видов животных и растений сокращается из-за вырубки лесов и утраты естественной среды обитания.

Для снижения негативных последствий процесса урбанизации необходимо принять следующие меры:

1. Введение строгих экологических стандартов

Государство должно предъявлять жесткие требования к промышленным предприятиям по сокращению выбросов. Уровень загрязнения можно снизить, поощряя использование экологически чистых технологий.

2. Развитие общественного транспорта и экологической мобильности

Расширение линий автобусов, электробусов и метро в городских районах позволит снизить зависимость от автомобилей. Кроме того, увеличение количества пешеходных и велосипедных дорожек будет способствовать развитию экологически чистого транспорта.

3. Сохранение и эффективное управление водными ресурсами [7].

Системы капельного орошения, проекты по сбору дождевой воды и расширение очистных сооружений позволят рационально использовать водные ресурсы.

4. Развитие зеленой инфраструктуры [3]

Создание зеленых крыш, городских лесов и экологических садов на зданиях способствует улучшению микроклимата города. Государственная поддержка проектов зеленого строительства имеет важное значение.

5. Просвещение общественности в вопросах экологически осознанного образа жизни. Вовлечение населения в охрану окружающей среды и усиление

кампаний по экологическому образованию и повышению осведомленности помогут снизить вредные последствия урбанизации.

Общий вывод: Процесс урбанизации в Самаркандской области отражает сложное взаимодействие демографического роста, экономической экспансии и развития инфраструктуры. Анализ показывает, что, хотя население города Самарканда значительно выросло, большая часть региона остается сельской, что свидетельствует о неравномерной модели урбанизации. Результаты исследования показывают, что городское развитие Самарканда зависит от исторических, экономических и политических факторов, при этом туризм и сельское хозяйство играют важную роль в формировании его пространственной структуры. Статистические данные свидетельствуют о том, что население Самарканда продолжает расти, и, по прогнозам, к 2035 году оно достигнет более 726 000 человек. Эта тенденция приведет к увеличению спроса на инфраструктуру, коммунальные услуги и жилье, что потребует разработки стратегий устойчивого городского развития. Интеграция интеллектуальных технологий, экологически чистых решений и усовершенствованных систем общественного транспорта будет иметь решающее значение для эффективного управления этим ростом. Кроме того, в исследовании подчеркивается важность сбалансированной политики развития городов и сельских районов для смягчения региональных различий и обеспечения справедливого использования ресурсов. Хотя урбанизация в Самаркандской области создает проблемы, связанные с инфраструктурой и экологической устойчивостью, она также открывает возможности для экономической модернизации и регионального развития. Внедряя научно обоснованную политику и подходы к устойчивому планированию, Самарканд может стать моделью сбалансированного и устойчивого городского развития в Узбекистане. Хотя процесс урбанизации в Самаркандской области внес положительный вклад в развитие экономики и инфраструктуры, он также может привести к возникновению экологических проблем. Для обеспечения экологической устойчивости города необходимо внедрять эффективную политику защиты окружающей среды и инновационные технологии. Благодаря устойчивому развитию города Самарканд может развиваться не только как исторический и культурный центр, но и как экологически чистый и комфортный для жизни район. [1]

При планировании устойчивой инфраструктуры важно сосредоточиться на следующем: Приоритетное развитие устойчивой инфраструктуры, которая поддерживает рост населения, сохраняя при этом экологическую целостность. Обеспечение того, чтобы инициативы по сохранению культурного наследия и расширению городской среды соответствовали сохранению богатого исторического и культурного наследия Самарканда.

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ЭФФЕКТИВНОСТЬ СТРОИТЕЛЬСТВА ЗДАНИЙ ИЗ СОВРЕМЕННЫХ КИРПИЧЕЙ ИЗ ГАЗОБЕТОНА

Аннотация: *В данной статье рассматриваются преимущества и недостатки строительства зданий из современных газобетонных кирпичей по сравнению с традиционным жжёным кирпичом. Проведен сравнительный анализ по ключевым техническим, экономическим и эксплуатационным характеристикам. Определена эффективность применения газобетона в современном строительстве, выдвинуты предложения по оптимизации использования данного материала.*

Ключевые слова: *Газобетон, жжёный кирпич, строительство, теплоизоляция, энергоэффективность, экономичность, строительные материалы.*

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EFFICIENCY OF CONSTRUCTION OF BUILDINGS MADE OF MODERN AERATED CONCRETE BRICKS

Abstract: *This article discusses the advantages and disadvantages of building buildings from modern aerated concrete bricks compared to traditional burnt bricks. A comparative analysis was carried out on key technical, economic and operational characteristics. The effectiveness of the use of aerated concrete in modern construction has been determined, and proposals have been made to optimize the use of this material.*

Keywords: *Aerated concrete, burnt brick, construction, thermal insulation, energy efficiency, cost-effectiveness, building materials.*

Современное строительство требует использования энергоэффективных, экологичных и экономически обоснованных материалов. Традиционные строительные материалы, такие как жжёный кирпич, остаются востребованными, но в последние годы всё большую популярность приобретают современные блоки и кирпичи из газобетона. Газобетон — легкий ячеистый бетон, обладающий хорошими теплоизоляционными характеристиками и простотой обработки. Однако эффективность его применения в строительстве требует комплексного анализа, учитывающего не только физико-технические свойства, но и эксплуатационные и экономические параметры.

Для объективной оценки эффективности газобетонных кирпичей проведён сравнительный анализ по следующим параметрам:

1. **Теплопроводность**
2. **Масса конструкции**
3. **Трудоёмкость кладки**
4. **Стоимость материала и работ**
5. **Скорость возведения стен**
6. **Экологичность**
7. **Огнестойкость и долговечность**
8. **Паропроницаемость**
9. **Прочность на сжатие**

Сравнение газобетонных блоков и жжёного кирпича

1-таблица.

Показатель	Жжёный кирпич	Газобетонный кирпич (блок)
Теплопроводность, Вт/(м·°С)	0,6–0,8	0,09–0,12
Масса 1 м³ кладки, кг	~1800	~600
Трудоёмкость кладки	Высокая	Низкая
Стоимость 1 м² стены, руб	Выше	Ниже
Скорость кладки, м²/день	10–15	25–30
Экологичность	Средняя	Высокая
Огнестойкость	Высокая	Высокая
Паропроницаемость	Средняя	Высокая
Прочность на сжатие, МПа	10–20	2,5–5

Проведённый сравнительный анализ на основе нормативных данных и научных исследований позволяет утверждать, что газобетонные блоки

обладают рядом преимуществ перед жжёным кирпичом, особенно при строительстве в регионах с холодным климатом. Прежде всего, газобетон характеризуется низкой теплопроводностью (λ = 0,09–0,12 Вт/м·°С для плотности D400–D600), что существенно ниже по сравнению с жжёным кирпичом (λ ≈ 0,6–0,8 Вт/м·°С). Согласно расчётам теплотехнического сопротивления наружных стен по СП 50.13330.2012 («Тепловая защита зданий»), кладка из газобетонных блоков толщиной 375–400 мм обеспечивает нормативное сопротивление теплопередаче без дополнительного утепления в большинстве регионов России, включая III и IV климатические зоны.

Согласно исследованию Института строительной физики, применение газобетона может сократить теплопотери наружных стен на **30–40%** по сравнению с кирпичной кладкой, требующей дополнительного слоя теплоизоляции (например, минераловатных плит толщиной 100–150 мм). Таким образом, здание из газобетона требует меньших затрат на отопление в течение жизненного цикла, что подтверждается расчётами годовых теплопотерь и экономическим анализом энергоэффективности зданий.

Кроме того, масса 1 м³ газобетона составляет в среднем 500–600 кг/м³ (в зависимости от плотности), тогда как жжёный кирпич имеет плотность около 1800 кг/м³. Это снижает нагрузку на фундаменты и позволяет использовать более лёгкие и менее дорогие фундаменты, особенно в малоэтажном строительстве. Также снижается расход строительных материалов и затрат на транспортировку.

Трудоёмкость кладки из газобетона ниже за счёт увеличенного формата блоков (например, один блок размером 600×300×200 мм заменяет 10–12 стандартных кирпичей). Исследования, показывают, что скорость кладки из газобетона возрастает в 2–2,5 раза по сравнению с кирпичной кладкой. Это снижает продолжительность строительных работ и общую стоимость объекта.

Таким образом, на основании нормативных характеристик и экспериментальных данных можно сделать обоснованный вывод о более высокой теплотехнической, технологической и экономической эффективности газобетона по сравнению с традиционным жжёным кирпичом в условиях холодного климата.

Тем не менее, более низкая прочность газобетона ограничивает его применение при строительстве зданий выше 3–5 этажей без дополнительного армирования или использования монолитных конструкций. Также важно учитывать необходимость защиты газобетона от влаги (штукатурка, фасадные системы).

В связи с этим предлагается:

- Разрабатывать нормативные документы с учётом новых технологий возведения из газобетона;
- Популяризировать технологии армирования кладки из газобетона;
- Поддерживать производство автоклавного газобетона с улучшенными характеристиками прочности;

- Внедрять обучающие программы для рабочих и проектировщиков, работающих с ячеистыми бетонами.

Выводы

- Газобетон является высокоэффективным материалом для малоэтажного и индивидуального строительства.
- По основным показателям теплоизоляции, экологичности и скорости строительства он значительно превосходит традиционный жжёный кирпич.
- Его использование позволяет экономить ресурсы, сокращать сроки строительства и повышать энергоэффективность зданий.

Современные газобетонные кирпичи — перспективный строительный материал, позволяющий сочетать экономичность, экологичность и технологичность строительства. При правильном проектировании и соблюдении строительных норм они способны заменить традиционные материалы в значительной части строительных проектов. Будущее строительства во многом связано с инновациями в сфере строительных материалов, и газобетон уверенно занимает в этом сегменте лидирующие позиции.

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ФАРМАЦЕВТИКА ТАРМОГИ СУБЪЕКТЛАРИДА ДОРИ-ДАРМОН ВОСИТАЛАРИНИНГ НАЗАРИЙ АСОСЛАРИ: ХАЛҚАРО ВА МИЛЛИЙ ЖИҲАТЛАР

Annotatsiya: *Маскўр мақолада дори-дармон воситалари назарий асослари ва уларни ишлаб – чиқариш, ҳамда уларни ишлаб – чиқаришдаги камчиликлар ва бартараф этиш йўлларини тўғрисида қисқача тўхталиб ўтилган.*

Калит сўзлар: *Формацевтика, дори-дармон воситалари, ишлаб – чиқариш, технологиялар, 2022, 2023 ва 2024 йилларда, ишлаш, етказиб бериш, сақлаш, ташиш ва реализация қилиш.*

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THEORETICAL FOUNDATIONS OF MEDICINAL PRODUCTS IN THE PHARMACEUTICAL INDUSTRY: INTERNATIONAL AND NATIONAL ASPECTS

Annotation: *The article briefly discusses the theoretical foundations of pharmaceutical products and their production, as well as shortcomings in their production and ways to eliminate them.*

Keywords*: Pharmaceutics, pharmaceuticals, production, technologies, 2022, 2023 and 2024, processing, delivery, storage, transportation and sale.*

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ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ЛЕКАРСТВЕННЫХ СРЕДСТВ В СУБЪЕКТАХ АПТЕЧНОЙ СЕТИ: МЕЖДУНАРОДНЫЙ И НАЦИОНАЛЬНЫЙ АСПЕКТЫ

Аннотация: *В статье кратко рассматриваются теоретические основы фармацевтических препаратов и их производства, а также недостатки в их производстве и пути их устранения.*

Ключевые слова: *Фармацевтика, лекарственные средства, производство, технологии, переработка, доставка, хранение, транспортировка и реализация в 2022, 2023 и 2024 годах.*

Ўзбекистон Республикаси Президентининг “Ўзбекистон Республикасининг «2022 йил учун Ўзбекистон Республикасининг давлат бюджети тўғрисида»ги Қонуни ижросини таъминлаш чора-тадбирлари тўғрисида”ги Қарорида келтирилган “2022 – 2024 йиллар учун биринчи даражали бюджет маблағларини тақсимловчиларнинг бюджет харажатлари ва ривожлантириш дастурларининг мақсадли индикаторлари”да “Қишлоқ хўжалигини ислоҳ қилиш, хусусан соҳада давлат бошқаруви тизимини такомиллаштириш, бозор муносабатларини кенг жорий қилиш, қишлоқ хўжалиги маҳсулотларини етиштирувчи, қайта ишловчи ва сотувчи субъектлар ўртасидаги муносабатларнинг ҳуқуқий асосини мустаҳкамлаш, соҳага инвестицияларни жалб қилиш, ресурс тежамкор технологияларни жорий этиш ҳамда қишлоқ хўжалиги маҳсулотлари ишлаб чиқарувчиларни замонавий техникалар билан таъминлаш” бўйича стратегик мақсад белгилаб берилган. Ушбу стратегик мақсад бўйича қишлоқ хўжалиги ва дори-дармон воситалари экспорти ҳажмининг ошиши бўйича прогноз 2022, 2023 ва 2024 йилларда мос равишда 1,4, 1,6 ва 2,3 млрд АҚШ долларига етказиш вазифаси белгиланган[104].

Мамлакатимиз корхоналарида бу каби долзарб муаммо ва вазифаларни ҳал қилиш, бугунги кунда, тайёр маҳсулотлар ҳисобининг нафақат амалий, балки назарий масалаларини ҳам такомиллаштиришга эҳтиёж сезади.

Тадқиқот давомида норматив-ҳуқуқий ҳужжатлар, халқаро ва миллий стандартлар ҳамда хорижий ва маҳаллий адабиётлар ўрганиб чиқилганда тайёр маҳсулотлар, жумладан дори-дармон воситаларимаҳсулотлари атамаларига турлича ёндашувлар қилиниб таъриф ва тавсифлар берилганлигига гувоҳ бўлиш мумкин.

Ўзбекистон Республикасининг “Дори-дармон воситалари маҳсулотининг сифати ва хавфсизлиги тўғрисида”ги Қонунида дори-дармон воситалари маҳсулотларига доир қуйидаги таърифлар келтирилган:

озиқ-овқатлар – дори-дармон воситалари хом ашёсидан тайёрланган ҳамда натурал ёки қайта ишланган ҳолида истеъмол қилинадиган маҳсулотлар;

дори-дармон воситаларимаҳсулоти – дори-дармон воситаларихом ашёси, (шу жумладан этил спирти), озиқ-овқатлар ва уларнинг таркибий қисмлари, дори-дармон воситаларихом ашёси ва озиқ-овқатларга тегиб турадиган моддалар, материаллар, ёрдамчи ва қадоқлаш материаллари ҳамда улардан тайёрланган буюмлар бирга;

[104] Ўзбекистон Республикаси Президентининг “Ўзбекистон Республикасининг «2022 йил учун Ўзбекистон Республикасининг давлат бюджети тўғрисида»ги Қонуни ижросини таъминлаш чора-тадбирлари тўғрисида”ги Қарори. 2021 йил 30 декабрь. ПҚ-73.

болаларбоп дори-дармон воситалари – болалар организмининг (уч ёшгача) физиологик хусусиятларига жавоб берадиган махсус дори-дармон воситалари;

дори-дармон воситалари маҳсулоти муомаласи – дори-дармон воситаларимаҳсулотини ишлаб чиқариш, тайёрлаш, харид қилиш, қайта ишлаш, етказиб бериш, сақлаш, ташиш ва реализация қилиш билан боғлиқ фаолият;

дори-дармон воситалари сифати – дори-дармон воситалари истеъмол хоссаларини белгилаб берадиган ва унинг одамлар ҳаёти ва соғлиғи учун хавфсизлигини таъминлайдиган мезонлар мажмуи;

дори-дармон воситалари хом ашёси – озиқ-овқатлар ишлаб чиқариш учун фойдаланиладиган ўсимлик, ҳайвонот, микробиология, шунингдек минераллар объектлари, сув. [105]

2-сон (IAS) “Заҳиралар” номли бухгалтерия ҳисобининг халқаро стандартида товар-моддий заҳиралар атамасига қуйидагича таъриф келтирилган:

“Товар-моддий заҳиралар – бу одатдаги фаолият доирасида сотиш учун мўлжалланган, бундай сотиш учун ишлаб чиқариш жараёнида бўлган, ёки ишлаб чиқариш жараёнида ёки хизматлар кўрсатилишида фойдаланилиши кўзланган хом ашё ва материаллар кўринишидаги активлар”[106].

Олиб борилган тадқиқотлар бир қатор хорижий олимларнинг ҳам бу борадаги фикр ва мулоҳазаларини ҳамда берган таърифларини ўрганиб чиқишни тақозо этди.

Россиялик олим С.Н.Поленованинг таъкидлашича, “Тайёр маҳсулот – бу корхонада ишлаб чиқариш жараёни тўлиқ тугалланган, стандарт талабларига ва техник шартларига жавоб берадиган, техник назорат хизмати томонидан қабул қилинган, қабул қилиш-топшириш ҳужжатлари билан расмийлаштирилган ва тайёр маҳсулотлар омборига топширилган маҳсулот”[107].

Ўзбекистон Республикаси 4-сон бухгалтерия ҳисобининг миллий стандартида қуйидагича таърифлар келтирилган:

Товар-моддий захиралар – фаолият юритиш жараёнида кейинчалик сотиш мақсадида сақлаб туриладиган ва ишлаб чиқариш жараёнида бўлган, шунингдек маҳсулот ишлаб чиқариш, ишларни бажариш ёки хизматлар кўрсатиш жараёнида ёхуд маъмурий ва ижтимоий-маданий вазифаларни амалга ошириш учун фойдаланиладиган моддий активлар. Ташкилотда тайёрланган тайёр маҳсулот (реализация қилиш учун мўлжалланган ва шартномада ёки қонунчилик ҳужжатларида белгиланган ҳолларда бошқа

[105] Ўзбекистон Республикасининг “Озиқ-овқат маҳсулотининг сифати ва хавфсизлиги тўғрисида””ги Қонуни. 1997 йил 30 август, 483-I сон.

[106] 2-сон БҲХС (IAS) “Заҳиралар (Inventories)”. https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2022/issued/part-a/ias-2-inventories.pdf

[107] Поленова С.Н. Учёт готовой продукции: оценка, выпуск из производства, продажа // Проблемы учёта. 2007. № 23 (215).

ҳужжатларнинг талабларида назарда тутилган техник ва сифат тавсифларига мувофиқ келадиган ишлов берилиши (бутланиши) тугалланган актив).[108]

Маҳсулотлар, шу жумладан тайёр маҳсулотлар бўйича тадқиқот ишлари олиб борилганда, албатта мамлакатимиз олимларининг илмий изланишларини ҳам алоҳида ҳисобга олишимиз зарур.

Мамлакатимизнинг иқтисодчи олимларидан К.С.Исмайлов ва А.Б.Утемуратовларнинг фикрича, “Тайёр маҳсулот - бу ишлаб чиқариш жараёнининг натижаси. Ишлаб чиқариш корхоналарида меҳнат маҳсулотига ҳамма ишлаб чиқарилган тайёр маҳсулот киради”[109].

Тадқиқотлар натижаси турли ахборот манбаларида “маҳсулотлар”, “тайёр маҳсулотлар” тушунчаларига берилган таъриф ва тавсифларни ҳам ўрганиб чиқишни тақозо этди.

Интернет манбаларида соҳага оид луғатларда ушбу категорияларга оид қуйидаги таъриф келтирилган:

Маҳсулот – иқтисодий фаолиятнинг ашёлар ва хизматларда мужассам этилган натижаси. Унинг моддий-буюм шакли моддий маҳсулот кўринишига эга. [110]

Тайёр маҳсулот (Finished Goods) – ишлаб чиқариш жараёнидан ўтган ёки қайта сотиш мақсадида сотиб олинган ҳамда компаниянинг эгалигида бўлган, бироқ ҳали сотилмаган товарлар.[111] Ушбу таърифда тайёр маҳсулот, вақтинча корхонанинг тасарруфида бўлган ва сотишга тайёр ҳолатда турган маҳсулот, деб ёндашилган.

Тайёр маҳсулотлар (Finished Goods) – ишлаб чиқариш корхоналарига хос бўлган инвентар тоифаси. Улар ишлаб чиқариш жараёнини тугатган, лекин ҳали сотилмаган ёки сотувчиларга тарқатилмаган маҳсулотдир. [112]

Тайёр маҳсулотлар – бу технологик жараёнларнинг барча босқичларини ўтган ва белгиланган талабларга (буюртмачи, давлат стандартлари, техник шартлар) жавоб берадиган маҳсулотлар. У турлари, навлари ва сақлаш жойлари бўйича реал ва таннарх кўрсаткичлари бўйича ҳисобга олинади. Қабул қилинган ҳисоб сиёсатига қараб, тайёр маҳсулотлар ҳақиқий ишлаб чиқариш таннархида ёки ҳисоб-китоб баҳосида ҳисобга олиниши мумкин.[113]

Тайёр маҳсулот – корхоналарда ишлаб чикариш жараёнининг пировард махсулоти. Технологик ишлов беришнинг барча боскичларидан утган, тасдикланган стандартлар ва техник шартларга мувофик келадиган (унинг сифатини тасдиклайдиган сертификат ёки бошка хужжат билан таъминланган), техник назорат булими кабул килган ва омборга топширилган

[108] 4-сон БҲМС “Товар моддий заҳиралар” // АВ томонидан 30.06.2020 й. 3259-сон билан рўйхатга олинган. https://lex.uz/docs/4890446
[109] Исмайлов К.С., Утемуратов А.Б. Молиявий ҳисоб. Маъруза матни. -Т.: Иқтисод-молия. 2011. -356 б.
[110] https://qomus.info/encyclopedia/cat-m/mahsulot-uz/
[111] https://www.wikiaccounting.com/accounting-finished-good/
[112] https://www.indeed.com/career-advice/career-development/finished-goods
[113] https://buxgalter.uz/publish/doc/text146642_uchet_gotovoy_produkcii

ёки харидорга юклаб жунатилган махсулот тайёр махсулот деб хисобланади.[114]

Тайёр маҳсулот (Finished goods) - бу ишлаб чиқаришнинг тўлиқ цикли давомида ишлаб чиқарилган ёки тайёр ҳолатда сотиб олинган, лекин харидорларга ҳали сотилмаган маҳсулот ёки товарлар.[115]

Тайёр маҳсулотлар – қайта ишлаш йўли билан тўлиқ тайёр бўлган, амалдаги стандартлар ва техник шартларга мос келадиган, ташкилот ва буюртмачи (харидор) омборида қабул қилинган маҳсулотлар ва ярим тайёр маҳсулотлар.[116]

Тайёр маҳсулот (ТМ) – бу товар қайсики, компания томонидан келгусида сотиш мақсадида ишлаб чиқарилади.[117]

Компания ёки якка тартибдаги тадбиркор бозорда нима билан чиқса тайёр маҳсулот дейилади. Унга нафақат товар ёки маҳсулот, балки хизмат, иш ва ҳуқуқлар ҳам таълуқлидир. Тадбиркор тайёр маҳсулотлар ишлаб чиқариш ҳисобини юритмасдан туриб, ўзининг бизнесини назорат ва самарали бошқара олмайди.[118]

Юқорида келтирилган хорижий ва маҳаллий олимлар томонидан берилган ҳамда халқаро ва миллий стандартлар, шунингдек ахборот манбаларида келтирилган таърифлар муҳим илмий амалий аҳамият касб этиб, тайёр маҳсулотларнинг муҳим жабҳаларини очиб беради. Лекин, ушбу таърифлардан кўриниб турибдики, маҳсулотлар, шу жумладан тайёр маҳсулотларга доир уларнинг барча хусусиятларини ўзида мужассамлаштирган ягона таъриф мавжуд эмас. Уларда маҳсулот ва тайёр маҳсулотларнинг барча жиҳатларини ўзида акс эттирадиган тавсифлар келтирилган, деб бўлмайди.

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МОДЕЛЬ ЗАВИСИМОСТИ ФИНАНСОВЫХ ПОКАЗАТЕЛЕЙ МЕДИЦИНСКИХ ОРГАНИЗАЦИЙ ОТ КОММЕНТАРИЕВ ПОЛЬЗОВАТЕЛЕЙ

Аннотация: *Онлайн-отзывы пациентов оказывают значимое влияние на финансовые показатели медицинских организаций. В исследовании на основе методов NLP и машинного обучения анализируется связь между тональностью, тематикой отзывов и экономической эффективностью клиник Москвы. Разработанная модель выявляет ключевые зависимости, что позволяет формулировать практические рекомендации для улучшения качества услуг и управления репутацией.*

Ключевые слова: *Машинное обучение, регрессионный анализ, NLP, математическая модель, тональность текста, отзывы пользователей*

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A MODEL OF THE DEPENDENCE OF FINANCIAL INDICATORS OF MEDICAL ORGANIZATION ON USER REVIEWS

Abstract: *Online patient reviews significantly influence the financial performance of medical organizations. This study employs NLP and machine learning methods to analyze the connection between sentiment, review topics, and the economic efficiency of clinics in Moscow. The developed model identifies key dependencies, enabling practical recommendations for improving service quality and reputation management.*

Keywords*: Machine learning, regression analysis, NLP, mathematical model, text sentiment analysis, user reviews*

Введение

Сегодня, отзывы пациентов — это не просто мнения, а реальный фактор, который может повлиять на успех медицинской клиники. Особенно это важно в сфере здравоохранения, где удовлетворённость пациентов напрямую сказывается не только на репутации, но и на доходах учреждения. В этой работе мы разбираемся, как именно отзывы в интернете связаны с

финансовыми показателями клиник и что можно сделать, чтобы улучшить их экономическую эффективность.

Таким образом, улучшение управленческих решений может быть достигнуто за счет анализа зависимости финансовых показателей медицинских организаций от отзывов пользователей. В работе проведен такой анализ.

Метод и результаты исследования

Для анализа использовалось несколько источников данных: список медицинских организаций, лицензированные адреса, виды лицензированной медицинской деятельности были получены из открытых данных правительства Москвы, бухгалтерские отчеты для организаций были собраны из ресурса ГИР БФО, отзывы пользователей были получены из карт 2GIS. Для получения координат из адресов использовалась открытая база данных карт — OpenStreetMap.

Всего, в изначальном наборе данных содержалось порядка 20 тысяч медицинских медицинских лицензий. Из них порядка 10 тысяч имели доступную бухгалтерскую отчетность, остальные были бюджетными организациями, НКО, или по иным причинам бухгалтерской отчетности для них получить не удалось. Для организаций, для которых неизвестны финансовые показатели, невозможно выделить зависимости этих показателей от отзывов, так что эти организации из исследования были исключены. Кроме того, были исключены организации, имеющие несколько лицензированных адресов, так как для таких организаций нет возможности связать отзывы на конкретном адресе с ее финансовыми показатели.

Для анализа, организации были кластеризованы [1] по видам лицензированной медицинской деятельности. С помощью метода локтя [2] было определено оптимальное количество кластеров — 4. После кластеризации получились осмысленные кластеры.

В первом кластере содержались организации, лицензированные под осуществление медицинских осмотров — в основном, организации, чьим основным видом деятельности является другая деятельность, но, по тем или иным причинам, нуждающиеся в лицензии на медицинские осмотры. Основной вид деятельности этих организаций не связан с медицинской деятельностью, так что для исследования они не подходят.

Во втором кластере содержались разнообразные салоны красоты, для определенных их видов деятельности требуется лицензия на осуществление медицинской деятельности. Эти организации так же не в полном смысле подходят под определение медицинских, и так же, в основном, зарабатывают не медицинской деятельностью, так что для исследования не подходят.

В третьем кластере содержались медицинские организации, оказывающие разнообразный спектр медицинских услуг, всего около 1000 штук. Эти организации подходят для исследования.

В четвертом кластере содержались медицинские организации, занимающиеся стоматологией. Медицинские организации, но, однако,

осуществляющие достаточно ограниченный и однообразный спектр услуг, с отзывами, значительно связанными с стоматологической спецификой. Эти организации заслуживают отдельного исследования, так что они были исключены из исследования.

Для выбранных медицинских организаций, предоставляющих широкий спектр медицинских услуг были собраны отзывы на картах 2GIS. Организации связывались по юридическому названию и адресу. Выбирались организации, имеющие несколько отзывов. Таким образом удалось найти около 270 медицинских организаций, обладающих отзывами, которые удалось связать лицензией и бухгалтерскими показателями. Удалось собрать около 7000 отзывов для этих организаций.

В дельнейшем осуществлялся анализ настроений [3] и тем в отзывах. Для этого использовалась большая языковая модель GigaChat light [4]. За счет оптимизации показателей, влияющих на стабильность ответа, таких как температура, удалось добиться достаточно стабильных оценок отзывов. С помощью большой языковой модели для отзывов сначала определялись определялись темы, из которых формировался закрытый список тем, затронутых в отзывах. А, дальше, с помощью модели для каждого отзыва определялись содержащиеся темы и общее настроение, а также, настроения по отдельным темам.

Всего удалось выделись несколько тем, которые были достаточно распространены между отзывами на на разных организациях: услуги, отношение, цена, локация, чистота, очереди, персонал.

Для каждой организации из полученных настроений определялись средние значения, эти средние значения в дальнейшем использовались для построения моделей зависимости финансовых показателей от отзывов.

Дополнительно, для всех медицинских организаций был включен дополнительный параметр, который, как ожидалось, заметно влиял на финансовые показатели и отражал положение этих организаций — расстояние до центра Москвы. Этот параметр был достаточно ограничен, однако, так как сравнительно плохо отражал транспортную доступность, специфику богатства тех или иных районов, однако, тем не менее, от него ожидалось улучшения качества модели.

В качестве предсказываемого параметра была выбрана удельная прибыль — отношение прибыли к затратам. Это был единственный показатель, который являлся достаточно однообразным как для больших, так и для маленьких медицинских организаций, при этом, что важно, его повышение непосредственно связано с улучшением выручки, так как при его повышении ожидается либо рост прибыли, либо снижение затрат, либо промежуточное состояние, когда прибыль растет быстрее затрат.

На основании этих параметров были построены интеграционные регрессионные модели [5] — общая линейная модель с двумя параметрами — расстояние и общее отношение, линейная модель по отдельным настроениям и расстоянию, и квадратичная модель настроениям, с дополнительным

линейным членом по расстоянию. Квадратичная модель использовалась для изучения ситуации, когда повышение того или иного тематического показателя требовал превосходящего роста затрат, что является не выгодным для медицинских организации. Это определяет некоторое предельное значение, выше которого повышение настроений для организации является нерациональным.

При этом, для моделей по отдельным темам была значимая мультиколлинеарность между отдельными темами, что говорит о том, что в отзывах часто позитив в разных темах коррелирует. Для учета этой мультиколлинеарности использовался L2 [6] метод регуляризации.

Итого, было получено, что расстояние во всех моделях является статистически значимым фактором на уровне p-value = 0,05, его повышение сопровождается снижением предсказываемой удельной прибыли, соответственно, быть ближе к центру является рациональным для медицинских организации и, например, для открытия филиалов разумно выбирать положения ближе к центру. Общее настроение значимый фактор в единственной модели, его повышение связывается повышением удельной прибыли, соответственно, получена зависимость между настроением отзывов с финансовыми показателями.

По настроениям по отдельным темам удалось установить статистически значимую связь с удельной прибылью для тем персонал и услуги, остальные параметры получились статистически не значимыми. При этом, оба тематических параметра получили оптимальное значение в пределах интервала между -1 и 1, в пределах которого находились настроения отзывов. Это говорит о том, что действительно существует некоторый момент, когда повышать настроение отзывов становится не выгодным. При этом, для большинства организаций, этот показатель выше, чем достигнутый ими, что говорит о том, что для них является выгодным повышение этих показателей за счет принятия управленческих решений.

При этом, значимость моделей получилась не очень большая — от 0,09 до 0,13, что говорит о том, что существует большое количество иных факторов, оказывающих более значимое влияние на финансовые показатели медицинских организаций. Этими параметрами могут быть маркетинг, реальные компетенции персонала, оказываемые услуги, репутация или какие-то контрактные связи, которые влияют на финансовые показатели.

Из полученной модели можно определить примерное улучшение финансовых показателей, которое можно ожидать. Получить его можно если подставить текущие и оптимальные показатели в модель и сравнить. По итогам сравнения можно сделать вывод о том, что модель предсказывает рост удельной прибыли примерно на 12%, однако, с учетом небольшого коэффициента детерминации с уверенностью можно ожидать, что реальный рост финансовых показателей будет ниже предсказываемого и оценку ему можно дать в предположении, что только 11% (коэффициент детерминации для квадратичной по отдельным темам настроениям) изменчивости реально

предсказывается моделью, соответственно, ожидаемый рост удельной прибыли будет порядка 1,2%, что, несмотря на не слишком большое значение остается статистически значимым.

Заключение

Итого, была построена интеграционная модель зависимости финансовых показателей медицинских организации от отзывов пользователей. Она показывает статистически значимую зависимость, из этого можно сделать вывод, что качество работы персонала и качество оказываемых услуг оказывают статистически значимое влияние на финансовые показатели, так же, как и положение организации в пространстве. При этом, небольшой коэффициент детерминации говорит о том, что использовать модель как единственный источник для принятия решений неверно, и модель может быть использована лишь как средство для улучшения принятия решений и мотивирования стратегических управленческих решений в медицинских организациях.

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ОРГАНИЗАЦИОННАЯ КОММУНИКАЦИЯ В XXI ВЕКЕ: ВЫЗОВЫ И ПЕРСПЕКТИВЫ

Аннотация: *В данной статье исследуются проблемы, связанные с созданием системы коммуникации в современных фирмах. В исследовании анализируются основные препятствия в коммуникации внутри организаций, включая проблемы вертикальной и горизонтальной коммуникации, нарушение баланса между формальными и неформальными взаимодействиями, а также трудности, связанные с культурными, технологическими и внутренне-внешними аспектами коммуникации. Причины возникновения этих проблем, их влияние на эффективность организаций и пути их решения были рассмотрены с использованием качественного метода исследования на основе анализа литературы и вторичных данных. Результаты показывают, что отсутствие четкой и эффективной системы коммуникации, использование устаревших технологий и недостаток культуры открытого общения приводят к снижению эффективности работы, недоверию и низкой мотивации в организациях.*

Ключевые слова: *система коммуникации, коммуникация в организациях, вертикальное и горизонтальное взаимодействие, технологии, эффективность.*

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ORGANIZATIONAL COMMUNICATION IN THE 21ST CENTURY: CHALLENGES AND PROSPECTS

Abstract:*This article examines the problems associated with the creation of a communication system in modern firms. The study analyzes the main obstacles to communication within organizations, including problems of vertical and horizontal communication, imbalance between formal and informal interactions, as well as difficulties associated with cultural, technological and internal-external aspects of communication. The causes of these problems, their impact on the effectiveness of organizations and ways to solve them were considered using a qualitative research method based on the analysis of literature and secondary data. The results show that the lack of a clear and effective communication system, the use of outdated technologies and the lack of a culture of open communication lead to decreased work efficiency, mistrust and low motivation in organizations.*

Keywords: *communication system, communication in organizations, vertical and horizontal interaction, technology, efficiency.*

Введение

Проблемы коммуникации в организациях возникают под влиянием различных факторов. Наиболее заметная причина — отсутствие четкой и эффективной системы связи. Если не установлены определенные правила и процедуры обмена информацией, сообщения могут быть неправильно истолкованы или, что еще хуже, вообще не дойти до нужного адресата. Кроме того, важным фактором является сопротивление изменениям. Многие компании продолжают использовать устаревшие системы связи, из-за чего они не могут соответствовать требованиям современного цифрового мира. Неспособность адаптироваться к новым технологиям усложняет передачу информации между сотрудниками, подразделениями и различными уровнями управления. Также компании, которые не уделяют внимание развитию культуры открытого и доверительного общения, отстают, поскольку в таких условиях сотрудники не могут свободно выражать свои мысли и опасения.

Обзор литературы по теме

Организации сталкиваются с различными проблемами, для решения которых требуются соответствующие подходы. Среди наиболее распространенных проблем можно выделить слабую организационную структуру, сбои в коммуникации и конфликты (Nedal M. Elsaid и др., 2013; Ristika Lani & Rovita Elsa Putri, 2024). Некоторые проблемы напоминают «вирус», поскольку они скрытые и быстро распространяются, что требует от руководства оперативных действий (Sleesman & Cronin, 2023). Эффективное управление проблемами включает в себя их выявление, внедрение решений и командную работу для поддержания здоровой организационной структуры (Nedal M. Elsaid и др., 2013). Конфликты могут быть как полезными, так и вредными, но их правильное управление имеет решающее значение (Ristika Lani & Rovita Elsa Putri, 2024).

Организациям также следует уделять внимание ключевым проблемам, таким как хранение данных, организационные процессы, управление целями и гибкость в работе с информацией (Newell, 1962). Разработка правильных

организационных стратегий позволяет компаниям повышать свою способность к решению проблем и общую эффективность. Такой подход применяется не только к отдельным организационным вопросам, но и к сложным программам, требующим гибкости в различных сферах (Newell, 1962).

Методология исследования

В данном исследовании был применен качественный (квалитативный) метод исследования с целью изучения проблем, связанных с системой коммуникации в современных фирмах. Мы опирались на анализ существующей литературы и рассмотрение практических примеров для выявления причин возникновения проблем, их влияния на эффективность организации и возможных решений. Основное внимание в исследовании было уделено видам барьеров в коммуникации — вертикальной, горизонтальной, формальной и неформальной, а также проблемам, связанным с культурными, технологическими и внутренними/внешними коммуникациями. Для анализа собранных данных использовался метод контент-анализа (content analysis). В рамках данного метода были выявлены и классифицированы основные темы из литературных источников и вторичных данных: барьеры в коммуникации, их влияние на организацию и пути их решения.

Анализ и результаты

Одним из наиболее распространенных барьеров в коммуникации является неопределенность сообщений. Неясные формулировки, запутанные инструкции или нехватка контекста приводят к недоразумениям, что негативно сказывается на общей продуктивности. Такое неправильное взаимодействие не только приводит к потере времени и энергии сотрудников, но и снижает качество работы.

Кроме того, устаревшие технологические средства также являются серьезной проблемой в коммуникации. Компании, которые не инвестируют в современные платформы для внутренних и внешних коммуникаций, могут отставать в конкурентной борьбе. Если системы обмена информацией устарели, поток данных становится разрозненным, что приводит к ошибкам и недоразумениям. Поэтому для любой организации приоритетной задачей должно стать модернизация и оптимизация коммуникационной системы.

Проблемы в коммуникации не только снижают эффективность работы команд, но и разрушают корпоративную культуру. Если информация передается неправильно, сотрудники могут повторять одни и те же задачи или работать на основе устаревших данных, что приводит к напрасной трате времени и ресурсов. В результате сроки выполнения задач нарушаются, а общая продуктивность снижается.

Кроме того, неправильная коммуникация может создать атмосферу недоверия и снижения мотивации внутри организации. Если сотрудники чувствуют, что их мнение не учитывается или им не предоставляется достаточная информация, их лояльность к компании снижается. Это может привести к росту текучести кадров и потере ценных специалистов, что

представляет серьезные потери для любого бизнеса. Именно поэтому активное устранение проблем в коммуникации играет решающую роль в создании здоровой и эффективной рабочей среды.

Проблемы деловой коммуникации охватывают широкий спектр аспектов и могут различаться в зависимости от особенностей каждой организации и ее внутренней динамики. Важно точно определить тип проблемы, с которой сталкивается компания, поскольку только в этом случае можно разработать эффективное решение и устранить или смягчить существующие трудности. Ниже представлены наиболее распространенные проблемы в деловой коммуникации и их характеристика.

Проблемы вертикальной коммуникации

Одна из самых распространенных проблем в организациях — недостаточная эффективность общения между разными уровнями управления, то есть проблемы вертикальной коммуникации. Во многих компаниях поток информации от высшего руководства к рядовым сотрудникам или, наоборот, от низших звеньев к руководству может теряться или искажаться. Это приводит к распространению неправильной информации, несогласованности целей и возникновению чувства разобщенности внутри организации. Чтобы предотвратить такие проблемы, важно создать четкие и эффективные каналы коммуникации, работающие как сверху вниз, так и снизу вверх. Это способствует формированию инклюзивной и вовлекающей корпоративной культуры.

Проблемы горизонтальной коммуникации

С другой стороны, проблемы горизонтальной коммуникации возникают между сотрудниками одного уровня или между подразделениями. Например, недостаточное взаимодействие между разными отделами, отсутствие координации или слабая командная работа могут снизить эффективность работы, вызвать конфликты и привести к дублированию задач. Такие проблемы могут быть обусловлены различными факторами — нездоровой внутренней конкуренцией, физическими или культурными барьерами между подразделениями, а также неудачными управленческими решениями. Для их устранения необходимо развивать культуру совместной работы и внедрять инструменты, способствующие открытому сотрудничеству между отделами.

Проблемы формальной и неформальной коммуникации

Организации используют как формальные, так и неформальные методы обмена информацией. Однако, если баланс между этими двумя видами коммуникации нарушается, могут возникнуть серьезные проблемы. Чрезмерно формальная коммуникация приводит к бюрократии и замедлению процессов, в то время как избыточное внимание к неформальному общению может способствовать распространению слухов и недопониманию. Поэтому формальная коммуникация должна быть достаточно четкой и структурированной, а неформальная — способствовать укреплению доверия между сотрудниками и созданию позитивной рабочей среды.

Проблемы, связанные с культурными и языковыми барьерами

В условиях глобализации компании работают в среде, где присутствует культурное и языковое разнообразие. Различия в традициях, ценностях и языковых барьерах могут стать серьезным препятствием для эффективной коммуникации. Иногда сотрудники могут неправильно понимать друг друга или испытывать дискомфорт из-за стиля общения, который противоречит их культурным нормам. Для предотвращения таких проблем организации должны разрабатывать инклюзивные стратегии, учитывающие культурные особенности персонала. Такой подход позволит каждому сотруднику чувствовать себя понятым и ценным членом коллектива.

Технологические проблемы

Сегодня цифровые технологии стали неотъемлемой частью деловой коммуникации. Однако нехватка технических знаний или устаревшая технологическая инфраструктура могут замедлить процесс общения. Это особенно заметно в компаниях, которые не стремятся адаптироваться к новым технологиям или не обеспечивают своих сотрудников необходимыми знаниями и навыками. Чтобы решить эти проблемы, организации должны инвестировать в современные средства связи и организовывать обучение персонала по эффективному использованию этих технологий.

Проблемы внутренней коммуникации

Внутреннее общение – это ключевой элемент, связывающий все части компании. Однако, если в нем возникают проблемы, эта связь ослабевает и негативно влияет на рабочие процессы. Такие проблемы могут быть вызваны неэффективными каналами связи или слишком жесткой иерархической структурой. Многие организации недооценивают важность обмена мнениями и сотрудничества между сотрудниками и отделами.
Для улучшения внутренней коммуникации сначала необходимо выявить существующие барьеры, а затем разработать конкретные предложения и решения по их устранению. Одним из эффективных способов решения таких проблем является открытое принятие и поощрение обратной связи от сотрудников, проведение регулярных встреч и использование инструментов, упрощающих командную работу. Когда внутренняя коммуникация налажена, сотрудники лучше понимают цели и миссию компании, становятся более ответственными и лучше подготовленными к достижению поставленных задач.

Проблемы внешней коммуникации и взаимодействия с клиентами

Недостатки во внешней коммуникации напрямую влияют на репутацию компании и отношения с клиентами. В условиях быстрого обмена информацией любая ошибка или недоразумение может привести к серьезным последствиям и сформировать у общественности ошибочное мнение о компании. Среди наиболее распространенных проблем можно выделить предоставление клиентам нечеткой или противоречивой информации, задержки в ответах на запросы и отсутствие эффективных коммуникационных каналов.

Чтобы минимизировать эти проблемы, компании должны разработать сильную стратегию внешней коммуникации, которая будет соответствовать их ценностям и стратегическим целям, а также ожиданиям клиентов. Это включает в себя использование CRM-систем для улучшения работы с клиентами, эффективное ведение коммуникации в социальных сетях и внедрение правильных методов взаимодействия на цифровых платформах. Благодаря этому компании смогут выстраивать прочные отношения с клиентами и улучшать имидж бренда.

Процесс деловой коммуникации: где могут возникать ошибки?

Коммуникация в организациях – это сложный процесс, в котором участвуют отправители и получатели информации. На каждом этапе могут возникать определенные проблемы, и если не обратить на них внимание вовремя, это может привести к снижению эффективности работы. Поэтому важно определить, на каком этапе могут возникать сбои в этом процессе. Ниже рассмотрены основные этапы деловой коммуникации и связанные с ними потенциальные проблемы.

Формирование сообщения

Процесс коммуникации начинается с формирования сообщения. Отправитель должен выразить свою мысль таким образом, чтобы она была понятна получателю. На этом этапе проблемы часто возникают из-за того, что отправитель не учитывает контекст, язык или уровень знаний получателя. Если сообщение нечеткое или содержит слишком много деталей, оно может быть неправильно истолковано. Чтобы избежать подобных ситуаций, отправитель должен передавать информацию в ясной и понятной форме.

Выбор канала связи

Эффективность общения во многом зависит от выбранного канала связи. Если канал выбран неправильно, сообщение может не выполнить свою функцию или вовсе не дойти до адресата. Например, отправка сложного или конфиденциального сообщения по SMS или электронной почте может оказаться неуместной. Неправильный выбор канала может привести к недоразумениям, задержкам или потере важной информации. Поэтому важно подбирать канал связи в зависимости от типа коммуникации.

Передача сообщения

Процесс передачи сообщения может прерываться из-за технических сбоев или различных физических и психологических барьеров. Например, плохое интернет-соединение, шум в окружающей среде или отвлекающие факторы на рабочем месте могут привести к искажению информации. Чтобы минимизировать такие проблемы, компании должны улучшать рабочую среду, развивать технологическую инфраструктуру и разрабатывать конкретные меры по устранению технических неполадок.

Прием и понимание сообщения

После получения сообщение должно быть расшифровано и правильно понято. Если получатель не воспринимает контекст или испытывает трудности с языком общения, он может сделать ошибочные выводы.

Причинами этого могут быть неправильное понимание терминологии, недостаток знаний или нехватка информации по теме. Чтобы избежать подобных ошибок, организации должны способствовать развитию навыков коммуникации у сотрудников, поощрять задавание уточняющих вопросов и стимулировать обратную связь.

Обратная связь

Обратная связь – это заключительный этап коммуникационного процесса, который помогает отправителю понять, была ли его информация правильно воспринята. Если обратная связь отсутствует или недостаточна, отправитель не может быть уверен в том, что его сообщение было понято верно. Чтобы избежать таких проблем, компаниям следует создать среду, в которой сотрудники могут свободно выражать свое мнение, а также поощрять регулярный обмен обратной связью.

Культурные и психологические барьеры

На всех этапах коммуникационного процесса могут возникать культурные и психологические барьеры. Различные предположения, стереотипы и культурные различия могут привести к неправильному пониманию сообщения и возникновению конфликтов. Чтобы преодолеть эти барьеры, организации должны формировать инклюзивную и разнообразную рабочую среду, обучать сотрудников межкультурной коммуникации и развивать корпоративную культуру, основанную на взаимном уважении.

Заключение

Понимание возможных проблем на каждом этапе коммуникационного процесса и их заблаговременное устранение значительно улучшает качество делового общения. Организации, внедряя стратегии по устранению этих проблем, могут совершенствовать свои внутренние и внешние системы коммуникации, что приведет их к долгосрочному успеху.

Для предотвращения подобных трудностей необходимо разработать эффективную систему внутренней коммуникации, в которой будут внедрены механизмы обратной связи. Важно создать условия, при которых сотрудники смогут свободно выражать свое мнение, открыто обсуждать идеи и вести продуктивный диалог. Чтобы обеспечить точность передачи информации и избежать недоразумений, содержание сообщений должно быть тщательно проверено и представлено в понятной форме.

Кроме того, необходимо регулярно обучать сотрудников навыкам коммуникации и создавать специальные команды для разрешения возможных недопониманий. Развитие эмпатии – умения слушать и понимать мнение других – также играет важную роль. Формирование культуры уважительного общения, учет культурных и индивидуальных различий помогут улучшить сотрудничество и взаимопонимание. Все эти меры способствуют повышению эффективности внутренней коммуникации, улучшению рабочей атмосферы и повышению общей продуктивности компании.

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НАВЫКИ ФОРМИРОВАНИЯ ЭКОНОМИЧЕСКИХ ЗНАНИЙ В СЕМЬЯХ

Аннотация: *в условиях стремительных социально-экономических изменений формирование экономических знаний в семье становится важным элементом воспитания финансово грамотного поколения. Данная статья посвящена рассмотрению методов и форм развития экономических навыков у детей и подростков в рамках семейного воспитания. Автор анализирует роль родителей как первых наставников в формировании представлений о деньгах, труде, потреблении, накоплении и рациональном распределении ресурсов. Особое внимание уделяется узбекскому культурному контексту, где семейные традиции и ценности играют ключевую роль в процессе экономического воспитания.*

Ключевые слова: *экономическое воспитание, семья, финансовая грамотность, экономические знания, трудовое воспитание, дети, родители.*

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SKILLS FOR FORMING ECONOMIC KNOWLEDGE IN FAMILIES

Abstract: *in the context of rapid socio-economic changes, the formation of economic knowledge in the family is becoming an important element in raising a financially literate generation. This article is devoted to the consideration of methods and forms of developing economic skills in children and adolescents within the framework of family education. The author analyzes the role of parents as the first mentors in shaping ideas about money, labor, consumption, accumulation and rational distribution of resources. Particular attention is paid to the Uzbek cultural context, where family traditions and values play a key role in the process of economic education.*

Keywords: *economic education, family, financial literacy, economic knowledge, labor education, children, parents.*

Формирование экономических знаний в семье приобретает всё большую значимость в современных социально-экономических реалиях. В условиях рыночной экономики, инфляции, цифровизации финансовых

операций и расширения потребительской среды каждому человеку, начиная с раннего возраста, необходимо обладать базовыми представлениями о деньгах, труде, бюджете, планировании и накоплении. Поскольку именно семья является первой социальной средой, где ребёнок получает не только эмоциональные и нравственные ориентиры, но и первые экономические впечатления, от степени осознанности и уровня знаний родителей в этой сфере напрямую зависит финансовая культура подрастающего поколения.

В Узбекистане традиционно семья играет центральную роль в воспитании и формировании мировоззрения ребёнка. Родители, старшие родственники, а также укоренившиеся культурные нормы оказывают большое влияние на понимание детьми таких понятий, как заработок, бережливость, трудолюбие, взаимопомощь и экономическая ответственность. Однако в условиях современных вызовов, включая переход к цифровой экономике, рост потребительского давления и изменение моделей поведения, возникает необходимость в системном подходе к формированию экономической культуры именно в семейной среде.

Вместе с тем наблюдается недостаточное внимание к вопросам экономического воспитания в домашних условиях: многие родители не располагают знаниями или инструментами для того, чтобы грамотно донести до ребёнка основы финансового мышления. При этом игнорирование или формальный подход к этому аспекту воспитания может привести к неэффективному финансовому поведению в зрелом возрасте: неумению планировать, контролировать расходы, избегать долговых обязательств, принимать взвешенные экономические решения.

Цель данной статьи — выявить и обосновать эффективные методы формирования экономических знаний в семьях Узбекистана, определить педагогические и социокультурные условия, при которых возможно успешное развитие финансовой грамотности у детей.

Формирование экономических знаний в семье представляет собой многогранный процесс, включающий передачу базовых понятий об экономике, обучение финансовым стратегиям и развитие навыков принятия разумных потребительских решений. Начальным этапом этого процесса является осознание родителями собственной роли в экономическом воспитании ребёнка. Они служат не только источником информации, но и примером для подражания. Повседневное поведение родителей в вопросах расходов, накоплений, планирования бюджета оказывает прямое влияние на экономическое сознание детей.

Одним из ключевых механизмов формирования экономических знаний является вовлечение ребёнка в семейную экономическую деятельность. Это может проявляться в совместном планировании покупок, обсуждении бюджета, анализе цен на товары, выборе между альтернативными вариантами и даже в простых обязанностях по дому, за которые ребёнок может получать символическое вознаграждение. Такие практики способствуют

формированию чувства ответственности и понимания взаимосвязи между трудом и доходом.

В условиях Узбекистана важным фактором остаётся опора на традиционные семейные ценности, включая уважение к труду, старшим, совместную помощь в быту и экономную жизнь. Многие родители передают детям экономические установки в устной форме — через наставления, примеры из жизни и сказания, в которых подчёркивается важность трудолюбия, честности, скромности и бережливости. Однако важно дополнить эти формы воспитания современными подходами и знаниями, адаптированными к реалиям цифровой экономики.

Современные технологии открывают новые возможности для экономического воспитания. Использование мобильных приложений для семейного бюджета, обучающих мультфильмов, видеороликов и настольных игр позволяет в увлекательной форме обучать детей экономике. Особенно эффективно применение игровых моделей, где ребёнок может управлять ресурсами, планировать и анализировать последствия своих действий. Это способствует развитию критического мышления и рационального подхода к финансовым вопросам.

Следует также отметить важность возрастного подхода к экономическому воспитанию. Дошкольники могут изучать понятия «деньги», «покупка», «сбережения» через игру и сказки. Младшие школьники уже способны участвовать в обсуждении семейного бюджета, выполнять простые расчёты, копить на желаемую вещь. Подросткам важно объяснять суть заработка, банковских операций, инвестиций и налогов. Такое поэтапное обучение помогает постепенно формировать у ребёнка целостную картину экономического мира.

Наряду с практическими аспектами не менее важна и эмоциональная сторона вопроса. Ребёнок должен чувствовать уверенность и стабильность в финансовом поведении родителей. Страхи, связанные с нехваткой денег, долги, конфликтные ситуации на почве финансов могут негативно сказаться на психоэмоциональном состоянии ребёнка и привести к формированию искажённых представлений о деньгах. Поэтому создание позитивного, открытого и уважительного диалога в семье по финансовым вопросам имеет ключевое значение.

Таким образом, формирование экономических знаний в семье требует комплексного подхода, сочетающего личный пример родителей, вовлечение ребёнка в практическую деятельность, использование доступных образовательных ресурсов и учет культурных особенностей. Это позволит не только повысить уровень финансовой грамотности детей, но и создать устойчивую модель семейного экономического воспитания, соответствующую требованиям современного общества.

Экономическое воспитание в семье является важнейшим элементом подготовки ребёнка к взрослой жизни в условиях рыночной экономики. Именно в семье формируются первые представления о деньгах, труде,

потреблении, ответственности и планировании. Родители, обладая определённым уровнем экономических знаний и навыков, способны передать их детям как через прямое обучение, так и посредством собственного поведения. При этом личный пример взрослых становится более действенным инструментом, чем любые словесные наставления.

В условиях Узбекистана, где семейные ценности и межпоколенческая преемственность играют особую роль, важно сохранить лучшие традиции экономического воспитания и одновременно внедрять современные подходы. Это включает использование цифровых инструментов, развитие критического мышления, навыков принятия финансовых решений и формирование устойчивой мотивации к труду. Необходимо не только приобщать ребёнка к экономическим аспектам повседневной жизни, но и объяснять причины, последствия и принципы экономических действий.

Залог успешного формирования экономической культуры в семье — это открытость, последовательность, позитивный настрой и внимание к возрастным особенностям ребёнка. Именно такая комплексная модель воспитания позволит подготовить новое поколение граждан, способных не только адаптироваться к изменяющимся экономическим условиям, но и эффективно управлять личными и семейными ресурсами в будущем. Развитие этих навыков с детства способствует не только финансовой устойчивости, но и социальной ответственности, бережливости, рациональности и независимости личности.

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РАЗВИТИЕ ЧИТАТЕЛЬСКОЙ ГРАМОТНОСТИ МЛАДШИХ ШКОЛЬНИКОВ: МЕЖДУНАРОДНЫЕ ОРИЕНТИРЫ И РЕАЛИЗАЦИЯ В УЗБЕКИСТАНЕ

Аннотация: *В статье рассматривается проблема формирования читательской грамотности у младших школьников в контексте международных требований к качеству образования. Представлены подходы, разработанные в рамках международных исследований PISA и PIRLS, дана характеристика положения Узбекистана в этой сфере. Особое внимание уделено анализу реформ, связанных с внедрением Национальной учебной программы, а также участию страны в исследовании PIRLS-2021. Описаны современные методы и перспективы развития читательской грамотности в начальной школе Узбекистана.*

Ключевые слова: *читательская грамотность, начальное образование, PIRLS, функциональная грамотность, Национальная учебная программа, Узбекистан.*

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DEVELOPMENT OF READING LITERACY IN PRIMARY SCHOOL CHILDREN: INTERNATIONAL BENCHMARKS AND IMPLEMENTATION IN UZBEKISTAN

Abstract: *The article considers the problem of developing reading literacy in primary school students in the context of international requirements for the quality of education. The approaches developed within the framework of the international studies PISA and PIRLS are presented, and the position of Uzbekistan in this area is characterized. Particular attention is paid to the analysis of reforms related to the implementation of the National Curriculum, as well as the country's participation in the PIRLS-2021 study. Modern methods and prospects for the development of reading literacy in primary schools in Uzbekistan are described.*

Key words: *reading literacy, primary education, PIRLS, functional literacy, National Curriculum, Uzbekistan.*

Введение

Современные вызовы требуют от образовательных систем стран мира не только повышения академической успеваемости учащихся, но и формирования у них функциональной грамотности, в том числе читательской. Согласно международным подходам, читательская грамотность представляет собой способность понимать, интерпретировать и использовать письменную информацию в разнообразных контекстах. Это один из важнейших факторов успешной социализации ребёнка и его дальнейшего обучения.

Для младших школьников овладение читательской грамотностью — ключ к формированию учебной мотивации, коммуникативных и когнитивных умений. В последние десятилетия внимание к этой проблеме значительно усилилось как на уровне национальных систем образования, так и в рамках глобальных инициатив, таких как PISA и PIRLS.

Международный контекст

Исследования PISA (OECD) и PIRLS (IEA) служат мировыми ориентирами в области оценки качества образования.

PIRLS (Progress in International Reading Literacy Study) оценивает уровень читательской грамотности учеников четвёртых классов, а PISA — пятнадцатилетних подростков.

Согласно данным PIRLS, читательская грамотность включает в себя умение:

- понимать текст на буквальном и глубинном уровне;
- делать выводы;
- анализировать структуру текста;
- высказывать собственное мнение на основе прочитанного.

Успешные страны-участницы (Сингапур, Финляндия, Ирландия) демонстрируют системный подход к формированию читательских умений с младшего школьного возраста, активное участие семьи, использование разнообразных текстов и форм работы.

Опыт России: ФГОС и читательская грамотность

В России читательская грамотность рассматривается как метапредметный результат начального образования. Согласно ФГОС, младший школьник должен уметь:

- осмысленно читать тексты разного типа;
- извлекать и интерпретировать информацию;
- применять знания из текста в практических ситуациях.

Для достижения этих целей используются такие методы, как:

- чтение с остановками;
- прогнозирование содержания;
- работа с заголовками и иллюстрациями;
- создание читательских дневников;
- интеграция чтения в разные предметы.

Узбекистан: путь к функциональной грамотности

С 2020 года в Узбекистане проводится комплексная образовательная реформа, в результате которой была утверждена Национальная учебная программа для начального образования. В рамках этой программы акцент сделан на развитие у учащихся функциональных и креативных навыков, среди которых центральное место занимает читательская грамотность.

Особенности национального подхода:

- переход от механического чтения к смысловому и аналитическому;
- использование текстов разных жанров и стилей;
- развитие навыков рассуждения и оценки содержания;
- многоязычный подход — работа с текстами на узбекском, русском и других языках обучения.

PIRLS-2021: участие Узбекистана и его значение

В 2021 году Узбекистан впервые принял участие в исследовании PIRLS. Это стало важной вехой в развитии национальной системы оценки качества образования. Участие позволило:

- получить объективные данные о достижениях учащихся;
- определить зоны для улучшения;
- скорректировать образовательную политику.

Результаты показали, что учащиеся Узбекистана испытывают трудности в заданиях, требующих анализа, интерпретации и оценки текста. Это свидетельствует о необходимости:

- совершенствования методической подготовки учителей;
- обновления программ и учебных материалов;
- развития читательской среды в школах.

Методы формирования читательской грамотности в Узбекистане

В начальных классах всё шире применяются:

- метод чтения с прогнозированием;
- обсуждение текста с элементами дискуссии;
- творческие задания по прочитанному;
- использование графических схем, таблиц и рисунков;
- введение портфолио читателя и мини-проектов по книгам.

Особое внимание уделяется курсам повышения квалификации педагогов, где рассматриваются современные методы обучения чтению и развития смыслового восприятия текста.

Заключение

Развитие читательской грамотности младших школьников — это стратегическая задача национальных систем образования. Международный опыт и исследования, такие как PIRLS, позволяют Узбекистану не только оценивать собственные достижения, но и совершенствовать образовательную практику.

Участие в международных проектах, внедрение Национальной учебной программы и ориентация на формирование функциональной грамотности создают прочную основу для развития осознанных, активных и читающих учащихся начальной школы.

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ИЗУЧЕНИЕ УРОВНЯ ПИТАНИЯ БЕРЕМЕННЫХ ЖЕНЩИН В УСЛОВИЯХ РЕСПУБЛИКИ КАРАКАЛПАКСТАН И ЕГО ФИЗИОЛОГИЧЕСКИЙ АНАЛИЗ

Аннотация*:В статье представлено исследование уровня питания беременных женщин в условиях Республики Каракалпакстан и его физиологический анализ. Целью работы является изучение особенностей питания беременных женщин, факторов, влияющих на их рацион, а также анализ влияния питания на физиологическое состояние матери и плода. Осуществлено комплексное исследование рациона питания, включая определение содержания макро- и микроэлементов, витаминов и других необходимых питательных веществ. В работе также рассматривается влияние недостаточности или избытка тех или иных компонентов пищи на течение беременности, развитие плода и здоровье будущей матери.*

Ключевые слова: *вещества, макроэлементы, микроэлементы, плод, рацион, анализ.*

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STUDY OF THE LEVEL OF NUTRITION OF PREGNANT WOMEN IN THE REPUBLIC OF KARAKALPAKSTAN AND ITS PHYSIOLOGICAL ANALYSIS

Abstract:*The article presents a study of the level of nutrition of pregnant women in the Republic of Karakalpakstan and its physiological analysis. The aim of the work is to study the nutritional characteristics of pregnant women, factors influencing their diet, as well as to analyze the effect of nutrition on the physiological state of the mother and fetus. A comprehensive study of the diet was carried out, including the determination of the content of macro- and microelements, vitamins and other essential nutrients. The work also examines the*

impact of deficiency or excess of certain food components on the course of pregnancy, fetal development and the health of the expectant mother.

Key words: *substances, macroelements, microelements, fetus, diet, analysis.*

Введение

Беременность представляет собой критический физиологический период, характеризующийся повышенными потребностями в питательных веществах для обеспечения как здоровья матери, так и оптимального развития плода. Адекватное питание в этот период является фундаментальным фактором, определяющим течение беременности, исход родов и здоровье будущего ребенка. Республика Каракалпакстан, расположенная в специфических аридных и экологически неблагоприятных условиях Центральной Азии, может характеризоваться уникальными особенностями питания населения, в том числе и беременных женщин. Изучение уровня питания данной категории населения в этом регионе и его физиологического влияния представляет собой важную научно-практическую задачу.

Республика Каракалпакстан, расположенная в экологически неблагополучной зоне Приаралья, характеризуется рядом специфических факторов, влияющих на здоровье населения. Уровень питания беременных женщин в данном регионе представляет особый интерес в свете высокой заболеваемости анемией, йодной недостаточности, гиповитаминозов и других состояний, обусловленных как дефицитом питательных веществ, так и общими социально-экономическими условиями.

Целью настоящего исследования является оценка уровня питания беременных женщин, проживающих в Республике Каракалпакстан, и проведение физиологического анализа влияния выявленных особенностей питания на течение беременности и состояние здоровья матери.

Материалы и методы

В исследование были включены 300 беременных женщин, наблюдаемых в женских консультациях города Нукус и близлежащих районов. Применялись методы анкетирования, суточного воспоминания о питании, лабораторные исследования уровня гемоглобина, сывороточного железа, витаминов A, D, B9 (фолиевая кислота), йода, а также УЗИ-оценка состояния плода.

Результаты и обсуждение

В рамках исследования планируется провести комплексное обследование беременных женщин, проживающих в различных районах Республики Каракалпакстан**.** Большинство женщин (более 70%)в исследуемых регионах употребляли пищу с недостаточным содержанием белка, витаминов и микроэлементов. В рационе преобладали углеводы (хлеб, картофель, рис), в то время как потребление мяса, рыбы, овощей и молочных продуктов находилось на низком уровне.

Наиболее распространённые дефициты:

- Железо: анемия диагностирована у 62% участниц (гемоглобин <110 г/л);
- Фолиевая кислота: дефицит выявлен у 48%;
- Йод: у 36% женщин наблюдался низкий уровень йодурии;
- Витамин D: гиповитаминоз D — у 54%, особенно в зимний период.

Недостаточное потребление микро- и макронутриентов сказывалось на общем состоянии здоровья женщин: наблюдались усталость, снижение иммунитета, повышенный риск гестоза и преждевременных родов. У плодов отмечались признаки задержки внутриутробного развития, маловодия и плацентарной недостаточности. Полученные данные будут иметь важное практическое значение для разработки и внедрения эффективных программ по оптимизации питания беременных женщин в регионе, улучшения качества медицинской помощи и снижения рисков неблагоприятных исходов беременности и родов. Результаты исследования могут послужить основой для разработки рекомендаций по питанию, обогащению пищевых продуктов и проведению образовательных мероприятий среди населения.

Заключение

Изучение уровня питания беременных женщин в Республике Каракалпакстан выявило серьёзные нарушения пищевого статуса, обусловленные как ограниченным доступом к качественным продуктам, так и недостаточной информированностью женщин о принципах рационального питания. Это требует системного подхода к решению проблемы — от внедрения программ нутритивной поддержки до просветительской работы среди населения.

Таким образом, проведение всестороннего исследования уровня питания беременных женщин в Республике Каракалпакстан и его физиологического анализа является актуальной и значимой задачей, результаты которой будут способствовать улучшению здоровья матерей и детей в регионе. Полученные данные позволят разработать научно обоснованные стратегии по коррекции питания и профилактике связанных с ним осложнений беременности.

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О ДЕЯТЕЛЬНОСТИ НИЖНЕ-АМУДАРЬИНСКОГО ГОСУДАРСТВЕННОГО БИОСФЕРНОГО РЕЗЕРВАТА

***Аннотация**: В статье рассматриваются основные направления деятельности Нижне-Амударьинского государственного биосферного резервата, расположенного в Республике Каракалпакстан (Узбекистан). Особое внимание уделено задачам по охране и восстановлению уникальных экосистем нижнего течения Амударьи, включая редкие и находящиеся под угрозой исчезновения виды флоры и фауны.*

***Ключевые слова:** мониторинг, биоразнообразия, экосистема, резерват, флора, фауна.*

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ON THE ACTIVITIES OF THE LOWER AMU DARYA STATE BIOSPHERE RESERVE

***Abstract:**The article discusses the main areas of activity of the Lower Amu Darya State Biosphere Reserve, located in the Republic of Karakalpakstan (Uzbekistan). Particular attention is paid to the tasks of protecting and restoring the unique ecosystems of the lower reaches of the Amu Darya, including rare and endangered species of flora and fauna.*

***Key words**: monitoring, biodiversity, ecosystem, reserve, flora, fauna.*

Нижне-Амударьинский государственный биосферный резерват, расположенный в низовьях реки Амударьи, играет ключевую роль в сохранении уникальных экосистем и биоразнообразия этого региона Центральной Азии. Созданный с целью охраны тугайных лесов, которые за последние сто лет сократились более чем в десять раз, резерват ведет многогранную деятельность, направленную на сохранение природы и устойчивое развитие региона.

Нижне-Амударьинский государственный биосферный резерват (НАГБР) — уникальный природный объект в Узбекистане, расположенный в дельте реки Амударьи в Каракалпакстане. Он был основан в 1971 году как заповедник «Бадай-Тугай» и преобразован в биосферный резерват в 2011

году. В 2021 году НАБР был включён в Всемирную сеть биосферных заповедников ЮНЕСКО.

Резерват охватывает площадь 68 717,8 га, включая заповедную (11 568,3 га), буферную (6 731,4 га) и промежуточную (50 418,1 га) зоны. Он является крупнейшим тугайным лесом Центральной Азии, представляющим собой важную среду обитания для множества видов флоры и фауны. Здесь произрастают 167 видов высших растений, включая турангу и спаржу персидскую, а также обитают более 20 видов рыб, 13 видов рептилий, 91 вид птиц и 58 видов млекопитающих, среди которых кабан и степной кот.

Особое внимание уделяется охране бухарского оленя *(Cervus elaphus bactrianus)*, занесённого в Красную книгу Республики Узбекистан и Международный союз охраны природы. С 1976 года в резервате проводится программа реакклиматизации этого вида, в результате которой численность бухарского оленя возросла до 1700 особей, что делает эту популяцию крупнейшей в мире.

Одной из приоритетных задач является сохранение и восстановление тугайных лесов – пойменных лесов, произрастающих вдоль реки. Эти уникальные экосистемы являются домом для множества редких и исчезающих видов растений и животных, включая бухарского оленя (Cervus hanglu bactrianus), занесенного в Красную книгу Международного союза охраны природы (МСОП). Резерват также занимается охраной других природных комплексов, таких как водно-болотные угодья и пустынные территории.

На территории резервата проводятся систематические научные исследования, направленные на изучение биоразнообразия, экологических процессов и влияния антропогенных факторов. Осуществляется мониторинг состояния популяций редких видов, динамики лесных массивов и качества водных ресурсов. Эти данные являются основой для разработки эффективных мер по охране природы.

Резерват активно развивает экологический туризм как инструмент для повышения осведомленности населения о ценности природного наследия и обеспечения устойчивого экономического развития местных сообществ. Разработаны специальные экотуристические маршруты, позволяющие посетителям познакомиться с красотой природы Нижней Амударьи, увидеть редких животных и растений. В административном здании резервата создан музей природы.

Важным аспектом деятельности резервата является экологическое просвещение населения, особенно молодого поколения. Проводятся лекции, семинары, экскурсии и другие образовательные мероприятия, направленные на формирование экологической культуры и ответственного отношения к природе.

На территории резервата находятся многочисленные объекты культурно-исторического наследия, такие как городища Джанпык-кала, Гяур-кала, мавзолей Султан Ваис бобо и другие. Резерват ведет работу по их

сохранению и популяризации, подчеркивая тесную связь между природным и культурным

Включение НАБР в сеть биосферных заповедников ЮНЕСКО открыло новые возможности для международного сотрудничества и получения технической поддержки в рамках программы «Человек и биосфера». Это способствует обмену опытом, внедрению лучших практик охраны природы и устойчивого развития региона

Таким образом, деятельность Нижне-Амударьинского государственного биосферного резервата имеет огромное значение для сохранения уникальной природы низовьев Амударьи и обеспечения устойчивого будущего этого региона. Благодаря усилиям сотрудников резервата и поддержке местных сообществ, удается сохранять ценные экосистемы и биоразнообразие для будущих поколений. Его деятельность направлена на сохранение уникальных экосистем, защиту редких видов и устойчивое развитие региона. Включение в сеть биосферных заповедников ЮНЕСКО подчёркивает его глобальное значение и открывает новые перспективы для охраны природы и научных исследований.

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АНАЛИЗ МАКРО И МИКРОЭЛЕМЕНТОВ РЫЛЬЦЕВ ШАФРАНА

Аннотация: *Рыльца шафрана содержат ряд органических веществ, а также некоторые неорганические соединения, микро- и макроэлементы. В данной статье представлены результаты наших исследований, направленных на анализ ряда микро- и макроэлементов в рыльцах шафрана.*

Ключевые слова. *Макроэлемент, микроэлемент, шафран, калий, натрий, железо, магний, кальций.*

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ANALYSIS OF MACRO AND MICROELEMENTS OF SAFFRON STIGMAS

Abstract*:Saffron stigmas contain a number of organic substances, as well as some inorganic compounds, micro- and macroelements. This article presents the results of our research aimed at analyzing a number of micro- and macroelements in saffron stigmas.*

Key words: *Macroelement, microelement, saffron, potassium, sodium, iron, magnesium, calcium.*

ВВЕДЕНИЕ. Шафран – многолетнее травянистое растение из семейства шафрановых. Цветет в феврале, плодоносят в апреле-августе. Дикие виды культивируется в предгорьях и горах Ташкента, Ферганской долины, культурно на Апшеронском полуострове Азербайджана [1; стр.379].

В Шафране содержат более 150 летучих и ароматических соединений. Он также имеет много нелетучих активных ингредиентов. В частности, в нем содержат углеводы, воды, полипептиды, липиды и минеральные вещества [2; стр.42].

В исследованиях, проведенных на шафране, выращенном в районе Торбат-Хайдари в Иране, было определено количество нескольких металлов в различных его частях. В ходе исследования были проанализированы

корневые луковицы, лепестки и клубнелуковицы шафрана. Результаты представлены ниже (табл. 1) [3; стр. 283-296].

Таблица 1.

Количественные показатели металлов в разных частях шафрана (мг/100г)

Название металлов	Клубнелуковицы	Лепестки	Рилцы
Натрий	121,467	40,733	19,88
Магний	349,167	353,167	187,667
Калий	422,5	1416,667	1409,00
Кальций	697,667	315,833	475,5
Железо	325,133	92,6	47,95
Цинк	14,572	3,917	3,042

Экспериментальная часть. Определение макро- и микроэлементов в почках шафрана оптико-эмиссионным спектрометрическим методом avio 200 (isp –oes). Для анализа образец рыльца шафрана предварительно высушивали в сушильном шкафу (vwr dry-line, германия) до тех пор, пока масса не изменялось. 200 мг полностью высушенного образца взвешивают на аналитических весах (fa 220 4 n) для минерализации, т.е. Для превращения его в прозрачный раствор. Для минерализации образца использовалось устройство для минерализации (milestone ethoseasy, италия). Для этого навеску (200 мг), 6 мл азотной кислоты (hno_3), очищенной на основе перегонки, т.е. Кислоты, перегнанной в приборе инфракрасной очистки кислоты (distill acid bsb-939-ir), и 2 мл перекиси водорода (h_2o_2) в качестве окислителя помещают в пробирку прибора.размещен. 20 мин. При 1800с вся смесь минерализуется.

После завершения процесса минерализации смесь в пробирке разбавляют дистиллированной водой (biosan, латвия) до 25 мл в отдельной конической мерной колбе.

Раствор в колбе переливается в специальные пробирки в отделе автопробоотбора и ставится на анализ. Приготовленный образец анализировали на оптико-эмиссионном спектрометре с индуктивно связанной плазмой avio 200 (isp-oes) (perkinelmer, сша). Точность прибора высокая, он позволяет измерять элементы, содержащиеся в растворе, с точностью до 10^{-9} г.

Обсуждение полученных результатов. В следующей таблице представлены данные, полученные в результате анализа:

Таблица 2.

Результаты элементного анализа рылец шафрана

П/н	Имя элемента	Символ	Количество	П/н	Имя элемента	Символ	Количество
1	Литий	Li	0,139	16	Железо	Fe	26,04
2	Алюминий	Al	21,23	17	Натрий	Na	20,15
3	Молибден	Mo	0,000	18	Свинец	Pb	0,000
4	Теллур	Te	28,05	19	Кадмий	Cd	0,000
5	Селен	Se	0,000	20	Ванадий	V	0,000
6	Сурьма	Sb	0,000	21	Цинк	Zn	74,325
7	Олово	Sn	0,000	22	Медь	Cu	1,025
8	Стронций	Sr	1,225	23	Серебро	Ag	0,000
9	Калий	K	375,4	24	Меркурий	Hg	0,000
10	Барий	Ba	0,000	25	Кобальт	Co	0,000
11	Хром	Cr	0,000	26	Никель	Ni	0,000
12	Марганец	Mn	2,38	27	Фосфор	P	432,2
13	Бор	B	0,675	28	Сера	S	35,87
14	Кальций	Ca	111,5	29	Магний	Mg	160,3
15	Мышьяк	As	0,000				

По сведениям, приведенным в таблице, можно сказать, что исследованные нами рыльца шафрана содержат эссенциальные металлы и неметаллы, такие как литий, натрий, калий, сера и фосфор. А вот токсичных элементов, таких как ртуть, свинец, кобальт и мышьяк, обнаружено не было.

Заключение. Благодаря своим целебным свойствам шафран с древних времен использовался среди лекарственных растений, занимая особое место в народной медицине.

Такие лечебные свойства шафрана объясняются его богатым химическим составом. Содержит ряд органических веществ, таких как каротиноиды и флавоноиды, положительно влияющие на процессы обмена веществ в организме человека.

Состав шафрана не ограничивается органическими веществами, он также содержит некоторые макро- и микроэлементы. Эти элементы отвечают

за многие функции в организме человека, и ни избыток, ни недостаток элемента не могут иметь негативных последствий.

В данной статье рассмотрены результаты исследований по анализу количества макро- и микроэлементов в почках шафрана.

Исследование показало, что цветочные почки, собранные с растения шафрана, произрастающего на территории нашей страны, содержат такие элементы, участвующие в обменных процессах, как литий, калий, натрий, железо, кальций, цинк, медь, марганец, магний.

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РАЗВИТИЕ МЕТОДИЧЕСКОЙ КОМПЕТЕНЦИИ БУДУЩИХ ПЕДАГОГОВ

Аннотация: *В статье раскрывается структура методической компетентности, принципы ее формирования, а также критерии и уровни ее сформированности.*

Ключевые слова и понятия: *компетентность, профессиональная компетентность, компетенция, методическая компетентность, структура.*

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DEVELOPMENT OF METHODOLOGICAL COMPETENCE OF FUTURE TEACHERS

Annotation: *The structure of methodological competence, the principles of its formation, as well as the criteria and levels of its formation are revealed.*

Key words and concepts: *competence, professional competence, competency, methodological competence, structure.*

В педагогической литературе исследователи чаще обращаются к термину «компетентность», определяя его содержание через знания, умения, опыт, теоретико-прикладную подготовленность к их использованию.Под компетентностью (от лат. competentis способный) понимается обладание компетенцией, то есть знанием, опытом, позволяющим судить о чем-либо, либо обладание правомочиями в решении определенных вопросов.

При рассмотрении деятельности учителя, как правило, используется термин «профессиональная компетентность» (Б.С. Гершунский, Н.В. Кузьмина, А.К. Маркова, Т.И. Руднева, Г.Н. Стайнов и др.). Практически все авторы сходятся во мнении, что профессиональная компетентность определяется уровнем собственного профессионального образования, опытом и индивидуальными способностями человека, его мотивированным стремлением к непрерывному самообразованию и самосовершенствованию, творческим и ответственным отношением к делу.

В нашей работе профессиональная компетентность выступает родовым понятием, по отношению к которому понятие «методическая компетентность» является видовым (Н.В. Кузьмина) [5]. Изучением проблемы формирования методической (научно-методической)

компетентности, методической подготовки педагогов занимались отечественные исследователи Т.Э. Кочарян, С.Г. Азаришвили, Т.И. Шамова, Т.А. Загривная, И.Ю. Ковалева, Т.Н. Гущина, А.А. Майер и многие другие. Т.Н. Гущина определяет методическую компетентность как интегральную многоуровневую профессионально значимую характеристику личности и деятельности педагогического работника, опосредующую результативный профессиональный опыт, как системное образование знаний, умений, навыков педагога в области методики и оптимальное сочетание методов профессиональной педагогической деятельности [6]. Ковалева И.В. рассматривает научно-методическую компетентность как интегральную характеристику деловых, личностных и нравственных качеств педагога, отражающую системный уровень функционирования методологических, методических и исследовательских знаний, умений, опыта, мотивации, способностей и готовности к творческой самореализации в научно-методической и педагогической деятельности в целом. Методическая компетенция – это знания и навыки по вопросам понимания целей своей деятельности и средств их достижения.

На основании анализа психолого-педагогической литературы, исследований в области образовательной теории и практики можно сделать вывод о том, что единого взгляда на определение понятия и структуры как профессионально-педагогической, так и методической компетентности не существует. Прежде, чем рассмотреть структуру методической компетентности, остановимся на том, что ее формирование должно начинаться с первого года обучения студента в педагогическом вузе. В методическом становлении будущего учителя существенную роль играют дисциплины общепрофессиональной подготовки. Особую роль на младших курсах следует отвести предметам психолого-педагогического цикла. Это связано с тем, что зачастую студенты к началу изучения методики преподавания предмета приходят с низким уровнем остаточных знаний основ психологии и педагогики. Отсутствие системности, неумение переносить знания из педагогики и психологии в методику приводит студентов к сложностям в освоении методики преподавания предмета, а, следовательно, затрудняет дальнейшее развитие методической компетентности. С этих позиций и будем рассматривать структуру и принципы развития методической компетентности, а также критерии ее сформированности.

В структуре методической компетентности ученые выделяют следующие компоненты: личностный, деятельностный, познавательный (когнитивный) и др. [1]. Личностный компонент методической компетентности учителя мы соотносим с умениями, связанными с психологической стороной личности педагога: коммуникативные, перцептивные, рефлексивные. Деятельностный компонент заключает в себя профессиональные знания и умения, умение актуализировать их в нужный момент и готовность использовать в процессе реализации своих

профессиональных функций. Также он предполагает овладение будущим учителем исследовательскими и творческими умениями.

Познавательный компонент основывается на умениях, составляющих теоретическую подготовку будущего педагога: аналитико-синтетические (умение анализировать, выявлять педагогические проблемы и определять пути их решения, умение классифицировать, систематизировать педагогические знания); прогностические (умение прогнозировать эффективность выбранных средств, форм, методов и приемов, умение применять педагогические знания, умения, навыки в новых условиях); конструктивно-проектировочные (умение структурировать и выстраивать процессы обучения и воспитания, отбирать содержание, формы, средства, подбирать методики, методы и приемы, умение планировать педагогическую деятельность).

Позволим себе сформулировать принципы формирования методической компетентности будущих педагогов:

– принцип интегративности формирования методической компетентности специалистов;

– принцип перехода от стихийных механизмов формирования методической компетентности будущих педагогов к сознательно управляемому и самоуправляемому процессу;

– принцип педагогической оценки, самооценки и рефлексии в процессе формирования методической компетентности педагогов;

– принцип индивидуальной траектории формирования методической компетентности специалистов;

– принцип фасилитирующего формирования методической компетентности будущих учителей.

Критерии сформированности исследуемой компетентности определяются на основе двух параметров – личностного и деятельностного, по которым производится оценка сформированности методической компетентности. Каждый критерий раскрывает система эмпирических показателей:

– мотивационно-целеполагающий критерий – готовность и интерес к методической работе, постановка и осознание целей методической деятельности, наличие мотива достижения цели, наличие мотивов познания, творчества;

– аксиологический критерий – осознание ценности педагогических знаний в формировании методической компетентности, удовле творенность своей деятельностью, признание приоритетности субъектно-субъектных отношений в педагогической деятельности;

– когнитивный критерий – наличие педагогических знаний, умений навыков и способность применять их в новых условиях; умение классифицировать и систематизировать педагогические явления; умение выделять педагогические проблемы, анализировать и решать их; владение активными методами и формами педагогической деятельности;

− операционный критерий – эффективность и продуктивность педагогической деятельности; овладение определенными умениями; постоянное самосовершенствование; педагогическое взаимодействие на уровне сотрудничества;

− аналитико-рефлексивный критерий – овладение аналитическими и оценочно-информационными умениями; саморефлексия, самокритичность; самоконтроль, самооценка будущего педагога;

− индивидуально-творческий критерий – гибкость и вариативность педагогического мышления, осознание наличия у себя творческих способностей, возрастающая динамика творческой активности; исследовательский подход и готовность к педагогическому творчеству.

Можно выделить 3 уровня развития методической компетентности будущего учителя:

− начальный или базовый (развитие происходит на имеющемся уровне методической компетентности в индивидуальном режиме педагогического сопровождения);

− основной или продуктивный (студент – деятельностный участник учебного процесса);

− креативный (процесс развития происходит самостоятельно на основе самореализации, носит исследовательский и творческий характер); при этом процесс развития методической компетентности рассматривается как многоуровневый.

Таким образом, в свете современных требований, развитие методической компетентности будущего учителя в процессе изучения педагогических дисциплин является необходимым условием для развития профессиональной компетентности педагога в целом.

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СРАВНЕНИЕ ВЗГЛЯДОВ ЖАН-ПОЛЯ САРТРА И МАРТИНА ХАЙДЕГГЕРА НА ПРОБЛЕМУ СМЕРТИ В ЧЕЛОВЕЧЕСКОЙ ЖИЗНИ

Аннотация: *В данной статье рассматриваются взгляды двух выдающихся философов XX века — Жан-Поля Сартра и Мартина Хайдеггера — на проблему смерти в контексте человеческой жизни. Сравнение их философских концепций позволяет глубже понять, как смерть влияет на существование, свободу и смысл жизни. Сартр, представляя экзистенциализм, рассматривает смерть как аспект свободы и абсурда, в то время как Хайдеггер, в своей герменевтической философии, акцентирует внимание на бытии к смерти как на способе осознания подлинности существования. В статье будут приведены конкретные примеры и анализ их работ, что позволит выявить различия и сходства в подходах этих философов.*

Ключевые слова: *Жан-Поль Сартр, Мартин Хайдеггер, смерть, экзистенциализм (направление, которое ставит в центр внимания человеческое существование, свободу и уникальность каждого индивида), бытие, свобода, подлинность, человеческая жизнь*

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COMPARISON OF THE VIEWS OF JEAN-PAUL SARTRE AND MARTIN HEIDEGGER ON THE PROBLEM OF DEATH IN HUMAN LIFE

Abstract: *This article examines the views of two prominent philosophers of the 20th century, Jean—Paul Sartre and Martin Heidegger, on the problem of death in the context of human life. Comparing their philosophical concepts allows for a deeper understanding of how death affects existence, freedom, and the meaning of life. Sartre, presenting existentialism, considers death as an aspect of freedom and absurdity, while Heidegger, in his hermeneutic philosophy, focuses on being to death as a way of realizing the authenticity of existence. The article will provide specific examples and an analysis of their work, which will reveal differences and similarities in the approaches of these philosophers.*

Keywords: *Jean-Paul Sartre, Martin Heidegger, death, existentialism (a trend that focuses on human existence, freedom and the uniqueness of each individual), being, freedom, authenticity, human life*

Смерть является одной из центральных тем философии, и взгляды на неё существенно различаются у различных мыслителей. В данной статье мы сосредоточим внимание на двух выдающихся философах XX века: Жан-Поле Сартре и Мартине Хайдеггере. Хотя оба они касаются проблемы смерти в своих произведениях, их подходы и выводы различаются, что делает их сравнение особенно интересным. Сартр и Хайдеггер представляют собой два разных подхода к экзистенциальной философии, которые подчеркивают различные аспекты человеческого существования.

Мартин Хайдеггер уделяет значительное внимание смерти в своей философии, рассматривая ее как основополагающий аспект человеческого

существования. В его главной работе "Бытие и время" смерть является не просто концом жизни, но и темой, раскрывающей подлинную сущность человека и его существования. Хайдеггер считает, что осознание собственной смертности открывает перед человеком истинный горизонт его бытия.

По мнению философа, смерть не следует воспринимать как чистое прекращение жизни; вместо этого она является неотъемлемой частью существования, подчеркивающей индивидуальность и уникальность каждого человека. Хайдеггер подчеркивает, что именно наличие смерти придает жизни значимость. Человек, осознающий свою конечность, способен жить более подлинно, принимая на себя ответственность за свои выборы и действия. Столкновение с явлением смерти подталкивает человека к поиску смысла, который невозможно найти в повседневной рутине.

В контексте единства бытия Хайдеггер исследует саму природу человеческого времени, которое не является линейным, а представляет собой сложный и многоплановый процесс. Смерть, как конечная точка, характеризует бытие человека как временное, что также указывает на необходимость находить смысл в каждом мгновении. По этой причине Хайдеггер выделяет необходимость откровенного и честного взгляда в лицо смерти, что ведет к очищению и открытию новых горизонтов для самореализации.

Таким образом, Хайдеггер не просто анализирует смерть как аспект человеческого существования; он показывает, как понимание смерти становится основополагающим моментом для самоосознания и подлинного существования. Осознанный подход к смерти выводит человека на уровень более глубокой связи с миром и самим собой, при этом постоянно напоминая о необходимости жить так, чтобы каждый момент был наполнен смыслом и значимостью.

Смерть у Жан-Поля Сартра рассматривается как неотъемлемая часть человеческого существования, определяющая свободу и индивидуальность. В его философии человек осознает свою смерть, что служит не утратой, а побуждением к действию. Это осознание открывает путь для подлинной свободы, так как смерть является конечной границей, за которой невозможно отложить выбор.

Взгляды обоих философов переплетаются в том, как они описывают осознание смерти. Вместе с тем, у Сартра это скорее освобождающий фактор, в то время как у Хайдеггера — способ глубже постигнуть смысл жизни. Сартр утверждает, что смерть опровергает всякую метафизику и производит экзистенциальные выборы, позволяя человеку быть «свободным до конца». Хайдеггер же считает, что подлинное существование начинается лишь тогда, когда человек воспринимает свою конечность как нечто интегральное в бытие.

Интересно, что Сартр, в отличие от Хайдеггера, акцентирует внимание на важности свободы выбора и необходимости отвечать за свои действия. Осознание смерти для него становится толчком к активизации своей жизни, в

то время как Хайдеггер подчеркивает, что принятие своей конечности приводит к более глубокому пониманию своей сущности и отношения к окружающему миру.

Смерть в философии Хайдеггера и Сартра обретает различное звучание, отражающее их индивидуальные философские системы и понимание человеческого существования. Хайдеггер, обсуждая смерть, исследует её как неотъемлемую часть бытия человека. Он видит в смерти возможность аутентичного существования, когда индивидуум сталкивается с конечностью своего бытия. Согласно Хайдеггеру, осознание смертности создает неопровержимую точку отсчета, позволяющую людям вести подлинную жизнь, учитывая свою уникальность и возможность выбора. Он подчеркивает значение "заботы", накладывая акцент на отношения между бытием и временем в контексте человеческой судьбы. Смерть, таким образом, становится не концом, а катализатором для понимания смысла жизни.

Сартр, напротив, обращается к смерти не как к чему-то, что предоставляет смысл существованию, а как к финальному состоянию, которое делает жизнь абсурдной. Для Сартра жизнь наполнена свободой выбора, но этот выбор, в свою очередь, обременен бременем ответственности. Смерть воспринимается как символ бессмысленности человеческой борьбы, так как она забирает у человека все достижения и намерения. У Сартра нет места для надежды на аутентичность, так как он считает, что смерть лишает всякого смысла любое намерение. Отсутствие заранее определенного смысла и конечность существования заставляют людей создать свой смысл, но при этом они остаются в бесконечном страхе перед неопределенностью.

Обе философские позиции также затрагивают тему социальной ответственности. Хайдеггер говорит о “Die Welt” — мире, где индивидуум не только осознает себя, но и свои взаимоотношения с другими. Такой подход подразумевает, что смерть может способствовать глубже осознанным связям с окружающими. Сартр же указывает на то, что свобода выбора является причиной социальных конфликтов и потерь, что может усугублять одиночество в лице неизбежной смерти.

Хайдеггер, обращаясь к смерти в контексте своей концепции бытия, акцентирует внимание на 'временности' и 'проекте бытия'. Для него смерть представляет собой глубинный аспект человеческого существования, который неразрывно связан с осознанием своей конечности. В 'Бытии и времени' он подчеркивает, что именно осознание смерти позволяет человеку заниматься вопросами подлинности своего существования. Смирение перед неизбежной судьбой высвобождает личность, побуждая к активному поиску смысла в жизни.

Сартр, в отличие от Хайдеггера, фокусируется на свободе и ответственности индивида. Его понимание смерти более тесно связано с экзистенциалистской концепцией, где смерть цементирует свободу человека, создавая уникальные условия для выбора и действия. В 'Быть и ничто' Сартр утверждает, что осознание своей конечности заставляет индивидуумов

принимать на себя ответственность за свои поступки, в то время как окружающий мир продолжает свое существование. В этом смысле смерть становится не только финалом, но и катализатором для экзистенциального выбора.

Таким образом, обе философии по-разному подходят к концепции смерти. Хайдеггер видит в ней неизбежный фактор, сопровождающий процесс бытия, в то время как Сартр использует ее для обоснования ценности свободы и действия. Смерть в их размышлениях занимает центральное место, однако трактуется через призму различных экзистенциальных вопросов.

Оба философа затрагивают тему смерти, но делают это с различных позиций, что делает их взгляды уникальными и взаимодополняющими.

Хайдеггер рассматривает смерть не как конечный момент, а как неотъемлемую часть человеческого существования. В его концепции «быть-на-смерть» выступает как способ осознания собственной сущности. Смерть для него — это способ быть истинным, позволяющий избежать самообмана и предостерегающий от уклонения в повседневную жизнь. Человек, осознающий свою конечность, может обрести подлинное «я» и активно участвовать в жизни, принимая на себя ответственность за свои выборы. Для Хайдеггера важно именно принятие своей судьбы, что раскрывает глубину и сложность человеческого бытия.

Сартр же фокусируется на свободе выбора и ответственности, что проявляется в его интерпретации смерти. Взгляд Сартра акцентирует внимание на моменте свободы, находящейся в контексте абсурда. Смерть в понимании Сартра — это не что-то, что завершает жизнь, а, скорее, нечто, что обрисовывает вокруг существования человека границы, открывающие пространство для выбора. Осознание смерти, по его мнению, заставляет человека осмысливать свою свободу в мире, где смысл жизни не задан заранее, и каждый сам создает его, противостоя условиям абсурдности.

Такое различие в подходах подчеркивает, что смерть для Хайдеггера связана с понятием подлинности и бытия, а для Сартра — с индивидуальной свободой и поиском смысла. Оба философа описывают смерть как важный аспект человеческого существования, но интерпретация этих аспектов значительно отличается. Хайдеггер находит чувство завершенности в принятии смерти как неизбежности, тогда как Сартр предлагает искать смысл жизни через активное отношение к ней и к необходимой неизбежности смерти.

Столкновение этих взглядов может служить площадкой для глубокого философского диалога об условиях человеческого существования. Важно отметить, что оба философа направляют читателя к размышлениям о ценностях, этике и существовании, и, несмотря на очевидные различия, их работы создают обширное поле для дальнейшего изучения и интерпретации.

Взгляды Сартра и Хайдеггера не только определяют ключевые моменты их философии, но и актуализируют различные пути осмысления смысла жизни и смерти. Сравнительный анализ этих подходов позволяет глубже

понять экзистенциальные идеи и их влияние на формирование современных концепций в философии, добавляя новые нюансы в обсуждение человеческого опыта. Обе перспективы открывают возможности для дальнейших размышлений о том, как мы воспринимаем свою конечность и как это восприятие формирует наше поведение и отношение к жизни.

Сравнительный анализ подходов Хайдеггера и Сартра показывает, что, несмотря на различия в их философских системах, оба мыслителя стремятся понять, как смерть влияет на человеческое существование. Хайдеггер предлагает более оптимистичный взгляд, в то время как Сартр фокусируется на абсурдности и тревоге, возникающей в связи с осознанием конечности. Эти различия в подходах также отражаются в их литературных стилях: Хайдеггер использует более метафорический и поэтический язык, тогда как Сартр предпочитает прямоту и ясность, что делает его идеи более доступными для широкой аудитории.

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К ИЗУЧЕНИЮ ПЛАСТИЧНОСТИ БАССЕИНОВ ВЕТВЛЕНИЙ АРТЕРИЙ ЖЕЛУДКА И 12-ПЕРСТНОЙ КИШКИ В ЭКСПЕРИМЕНТЕ

Резюме: *В статье изучены выявления зоны ветвления магистральных артерий желудка собаки в эксперименте. Несмотря на большое количество интраорганных анастомозов между конечными ветвями магистральных артерий желудка, каждая магистральная артерия имеет свою зону ветвления, где в норме циркуляция крови осуществляется данной артерией.*

Ключевые слова: *собака, опухоль, клетка, магистральные артерии, 12-перстная кишка, сосуд, желудок, индигокармин, раствор, химиотерапия, ангио грамма.*

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TO STUDY THE PLASTICITY OF BRANCHING POOLS OF THE STOMACH AND DUODENUM ARTERIES IN THE EXPERIMENT

Abstract: *The article studies the detection of branching zones of the main gastric arteries of a dog in an experiment. Despite the large number of intraorgan anastomoses between the terminal branches of the main gastric arteries, each main artery has its own branching zone, where blood circulation is normally carried out by this artery.*

Keywords: *dog, tumor, cell, main arteries, duodenum, vessel, stomach, indigo carmine, solution, chemotherapy, angiogram.*

Ввдение. В настоящее время имеется большое количество работ, посвященных зондированию магистральных артерий головы, туловища и конечностей с целью химиотерапии опухолей разной локализации [3]. В последние годы проблема химиотерапии злокачественных опухолей вообще и опухолей органов брюшной полости, в частности, путем регионарной инфузии и перфузии привлекает внимание как клиницистов, так и экспериментаторов [1]. Введение лекарственных веществ в артерию, кров снабжающую область очага поражения, позволяет создать высокую концентрацию препарата в крови, контактирующего непосредственно с опухолевой клеткой или воспалительным очагом [2]. Развитие метода

регионарной инфузии и перфузии органов непосредственно связано с изучением бассейнов ветвления сосудов, возможностей их изоляции для предотвращения утечки перфузата. В отношении ряда органов такие исследования проводятся [4,5]. Однако исследования, посвященные прижизненному изучению зон ветвления магистральных артерий желудка и 12-перстной кишки, крайне малочисленны и противоречивы.

Цель исследования. Нами были изучено пластичности бассеинов ветвлений артерий желудка и 12-перстной кишки в эксперименте.

Материалы и методы исследования. Материалом для исследования мы первоначально на ангио граммах 5 интактных желудков и 12-перстной кишки собаки изучали бассейны ветвления отдельных артерий этих органов. Далее, в экспериментах на 18 собаках прижизненно выявлялись зоны ветвления отдельных артерий желудка и 12-перстной кишки путем раздельного введения в артерии 5% раствора индигокармина. Сопоставлялись данные острых и хронических экспериментов с посмертными ангио граммами желудка и 12-перстной кишки 5 собак в норме.

При введении 5% раствора индигокармина в конкретные сосуды желудка и 12-перстной кишки окрашивались раствором та зона исследуемого органа, в которой кровообращение поддерживается главным образом этим сосудом. Бассейны ветвления магистральных сосудов желудка и 12-перстной кишки изучались при сохраненных других артериях и венах, что, естественно, уже само вызывало противодействие вводимому индигокармину и, таким образом, ограничивало его распространение естественными границами. Для выявления зоны ветвления магистральных артерий желудка собаки в эксперименте индигокармин вводился в левую желудочную артерию у 4 собак, левую желудочно-сальниковую артерию -у 4 собак, правую желудочную - у 3 собак, правую желудочно-сальниковую - у 4 собак. Введение раствора индигокармина в краниальную поджелудочно- 12-перстнокишечную артерию производилось у 6 собак, каудальную поджелудочно-12-перстнокишечную артерию - у 6 собак и вторую ветвь краниальной брыжеечной артерии -у 6 собак. После операции собаки оставались жить. При введении 5% раствора индигокармина в левую желудочную артерию раствором окрашивались область кардии, частично дно, малая кривизна и малый сальник вплоть до пилорической части, две трети передней и задней стенок желудка.

Результаты исследования. При введении раствора индигокармина в правую желудочную артерию раствор распространяется, в основном, пилорической части желудка со стороны его малой кривизны, включая переднюю и заднюю стенки органа. Раствор, введенный в правую желудочно-сальниковую артерию, распространялся по большой кривизне желудка от начального отдела 12-перстной кишки до места перехода тела желудка в пилорическую часть, охватывая переднюю и заднюю стенки органа и правую половину большого сальника. Из-за малого калибра коротких артерии, кров снабжающих дно желудка, раствор индигокармина вводили в селезне-ночную

артерию. До введения раствора в селезеночную артерию её предварительно перевязывали у ворот селезенки. При этом раствор индигокармина распространялся до дна желудка, охватывая треть передней и задней поверхностей органа и левую половину большого сальника, достигая места перехода тела желудка в пилорическую часть.

Таким образом, несмотря на большое количество интра-органных анастомозов между конечными ветвями магистральных артерий желудка, каждая магистральная артерия имеет свою зону ветвления, где в норме циркуляция крови осуществляется данной артерией. Магистральная артерия желудка, многократно разветвляясь, образует сеть «конечных» артерии, в которых кровь в обычных условиях мало смешивается. Из каждой магистральной артерии желудка кровь поступает преимущественно в соответствующие зоны ветвления этой артерии. Отсутствие смешения крови в зоне ветвления магистральных артерий желудка может объясняться тем, что давление в разветвлениях магистральных артерий желудка при обычных условиях примерно одинаковое Те области сосудистого русла оболочек желудка, где имеется наибольшее количество анастомозов между бассейнами ветвления магистральных артерий органа, обозначаются обычно зонами смежного кровоснабжения. Область смежных зон кровоснабжения окрашивалась раствором индигокармина во всех случаях независимо от того, через какую артерию мы вводили раствор индигокармина.

Результаты сопоставления данных эксперимента с полученными посмертными ангио граммами желудка подтверждают зональность кровообращения в стенке этого органа; что обусловливается наличием нескольких источников кров снабжения. Наличие многочисленных артериальных анастомозов между конечными ветвями магистральных артерий желудка создает оптимальные условия для быстрого коллатерального притока крови из одной артерии в сохранившиеся бассейны ветвления магистральных артерий после выключения их экстра-органных отделов.

Вывод: Полученные нами результаты прижизненной инъекции магистральных артерий 12-перстной кишки расанором индиго кармина и сопоставление их с посмертными ангио граммами, показывают, что каждая артерия 12-перстной кишки имеет свою зону ветвления, где в обычных условиях обеспечивает циркуляцию крови. Путем введения лекарственного вещества через одну из магистральных артерий желудка и 12-перстной кишки нельзя получить его равномерного распределения в пределах стенок желудка и 12-перстной кишки. Каждая магистральная артерия названных органов имеет свою зону ветвления, где кровоток осуществляется преимущественно данной артерией.

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ЛЕЧЕНИИ ЗАБОЛЕВАНИЙ ПАРОДОНТА ФОТОДИНАМИЧЕСКОЙ ТЕРАПИЕЙ

Аннотация: *Отдельное применение фотодинамической терапии (ФДТ) было успешным при начальном лечении заболеваний пародонта, очевидно после одноразового применения у пациентов снизилась кровоточивость при зондировании (BoP).*

Ключевые слова: *фотодинамической терапии, лечения, пародонт.*

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PERIODONTAL DISEASES OF PHOTODYNAMIC THERAPY IN THE TREATMENT

Annotation:*A separate application of photodynamic therapy (PDT) was successful in the initial treatment of periodontal diseases, obviously after a one-time application, bleeding during probing (BoP) decreased in patients.*

Keywords: *photodynamic therapy, treatment, periodontal disease.*

Введение: доказано, что фотодинамическая терапия (ФДТ) является одним из новых инновационных методов лечения хронического воспалительного процесса пародонта. Она обладает антибактериальным действием и не имеет ничего общего с механизмом антибиотиков и

антисептиков. При запуске процессов ФДТ при взаимодействии фотосенсибилизатора и с видимой части спектра света молекулы кислорода переходят в возбужденное (триплетное) состояние, обладающий выраженным повреждающим действием на патологические клетки (9, 11, 14, 15, 16). Взаимодействуя с белками и другими макромолекулами, синглетный кислород запускает каскад свободнорадикальных реакций, в результате которых повреждаются биологические структуры, развиваются некротические изменения. Ключевым фактором является способность фотосенсибилизатора избирательно накапливаться в энергодефицитных клетках (микробных, поврежденных), что обусловливает возможность использования ФДТ для их уничтожения. (2,3, 5, 11, 16). Поскольку в возникновении пародонтита инфекционный компонент имеет определяющее значение, актуальность изучение аспектов ФДТ не вызывает сомнений. Эффективность ФДТ не зависит от спектра чувствительности микроорганизма к антибиотикам. Метод в равной степени губителен в отношении различных бактерий, простейших, грибов и вирусов. Повреждающее действие фотохимического процесса обусловлено свободнорадикальными реакциями, развитие микробной устойчивости к ФДТ практически исключено. Фотосенсибилизаторы, используемые при проведении ФДТ, не обладают токсичным и мутагенным действием, которое

способствует селекции резистентных штаммов, не происходит поражения нормальной микрофлоры в зонах, не подлежащих лечению. (1, 6, 11, 15)

Цель: изучить возможности применения ФДТ в терапии воспалительных заболеваний пародонта (хронический генерализованный пародонтит, средней степени, обострившееся течение).

Материалы и методы исследования: обследовано 50 пациентов мужчин – 30(60%), женщин –20(40%) в возрасте от 18 до 60 лет с явлениями хронического пародонтита. При осмотре у всех пациентов ткани десны были отечны, гиперемированы, цианотичны, межзубной сосочек в области нижних резцов выглядел уплощенным, маргинальная десна имела валикообразную форму. Зубы имели патологическую подвижность I-II ст. все больные были распределены на 2 группы: контрольная группа 25-50% (пациентам проводились общепринятые методы лечения пародонтита и даны рекомендации по гигиене полости рта), вторая группа 25-50% (в терапии пародонтита использовалось комплексное лечение с применением ФДТ и даны рекомендации по гигиене полости рта). Всем пациентам и опытной и контрольной группы проводилось снятие зубных отложений с использованием ультразвукового аппарата, полировка зубов, даны рекомендации по обучению гигиены.

Результаты: У пациентов контрольной группы через сутки после третьей процедуры сохранялись кровоточивость и отек десен, гноетечение из патологического кармана. Отмечались: цианотичный вид десны, проба Шиллера- Писарева - положительна, количество десневой жидкости резко

увеличено, присутствовал неприятный запах и только после 7 процедуры значительно уменьшились кровоточивость и гноетечение из карманов, количество десневой жидкости оставалось увеличенным, глубина патологических карманов оставалась прежней, сохранилась патологическая подвижность зубов. Через 14 суток после полного окончания лечения исчезал отек, кровоточивость десен, количество десневой жидкости достигало верхней границы нормы, проба Шиллера-Писарева- отрицательная, глубина пародонтальных карманов оставалась прежней.

Во второй опытной группе пациентов 25-50% назначалась ФДТ с использованием в качестве источника излучения Fotosan с длиной волны 635 нм и локального фотосенсибилизатора – раствора толуидинового синего – 0.1 мг/мл. на пораженные участки слизистой десны и пародонтальных карманов обрабатывали раствором фотосенсибилизатора, промывали дистиллированой водой, в дальнейшем к пораженному участку подводили наконечник световода аппарата Fotosan который обеспечивал на поверхности слизистой пятна лазерного излучения диаметром до 5 см. время экспозиции занимало 5 мин. После проведения процедуры, обработанные участки промывали большим количеством стерильной воды. Курс процедур лазеротерапии состоял из 3 сеансов с интервалом 76 часов. Показатель пробы Шиллера-Писарева снизился до 0.4 +- 0.15. на пятые сутки количество десневой жидкости значения нормы, проба Шиллера-Писарева отрицательная, исчез неприятный запах. Глубина карманов уменьшилась на 1 мм (до лечения 5 мм.) патологическая подвижность сохранена. Ткани десны – бледно- розовой окраски, упруго- эластической консистенции. Эффект лечения сохранялся в течение длительного времени.

Заключение : таким образом на основании полученных результатов можно сделать вывод о том, что фотодинамическая терапия обладает выраженным антимикробным действием в отношении грамположительных бактерий. Выгодным преимуществом фотодинамического воздействия является возможность локального, избирательного поражения микробных клеток, расположенных как поверхностно, так и в межклеточных пространствах без побочного влияния на окружающие ткани и микрофлору соседних зон. ФДТ является реальной альтернативой традиционным методам лечения пародонтита.

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ВЛИЯНИЕ ТРЕЩИНООБРАЗОВАНИЯ И АНИЗОТРОПИИ НА ПРОЧНОСТЬ И НАДЕЖНОСТЬ ЖЕЛЕЗОБЕТОННЫХ КОНСТРУКЦИЙ

Аннотация. *Статья посвящена исследованию использования бетона и железобетона в строительстве, с акцентом на проблему трещинообразования и анизотропных свойств материала. Рассматриваются методы армирования железобетона для повышения его несущей способности, однако с учетом возникающих сложностей при трещинообразовании. Автор анализирует текущие численные методы расчета, включая методы конечных и граничных элементов, а также подходы, основанные на анализе равновесия внешних нагрузок и предельных усилий.*

Ключевые слова. *бетон, железобетон, армирование, трещинообразование, анизотропия, численные методы, конечные элементы, граничные элементы.*

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STUDY OF THE INFLUENCE OF CRACK FORMATION AND ANISOTROPY ON THE STRENGTH AND RELIABILITY OF REINFORCED CONCRETE STRUCTURES

Abstract. *The article is dedicated to the study of the use of concrete and reinforced concrete in construction, with a focus on the problem of crack formation and anisotropic properties of the material. The methods of reinforcing reinforced concrete to enhance its load-bearing capacity are considered, while taking into account the complexities arising during crack formation. The author analyzes current numerical calculation methods, including finite element and boundary element methods, as well as approaches based on the analysis of the equilibrium of external loads and limiting forces.*

Keywords. *concrete, reinforced concrete, reinforcement, crack formation, anisotropy, numerical methods, finite elements, boundary elements.*

Введение. Современное строительство активно использует бетон и железобетон в качестве основного строительного материала для создания

несущих конструкций. Эти материалы доминируют в проектировании сооружений, таких как мосты, эстакады и объекты промышленно-гражданского строительства. При армировании железобетона его несущая способность увеличивается, однако армирование также усложняет условия работы материалов, особенно в случаях, когда в конструкции возникают трещины.

В последние годы происходит рост неопределенности в оценке надежности железобетонных сооружений, что требует развития численных методов для их расчета. Применение методов конечных и граничных элементов (МКЭ и МГЭ) позволяет учитывать линейные свойства материалов, но для учета нелинейных свойств железобетона необходимы более сложные программы и точная оценка его фундаментальных свойств. Разработка таких методов помогает улучшить точность расчетов и прогнозировать поведение конструкций на всех этапах эксплуатации.

В современном строительстве основные несущие конструкции выполняются из различных видов бетона и железобетона. Они сохранют за собой доминирующие положения на самую далёкую перспективу составляют значительную долю конструкций используемых при проектирование сооружений различного назначения: мостов, эстакад, объектов промышленно-гражданского строительства. Армирование повышая несущая способность приводить к существенному усложненную условию работы материалов. В практических расчётах конструкции на стадии работы без трещин влияния армирования на эту связь не значительно, а свойства железобетона можно рассматривать изотропным. После трещинообразования анизотропия проявляется весьма существенно, особенно, при наличии усилия сдвига в направление, параллельном ориентации трещин. Наиважнейшей значение имеет разработка новых методов, связанных с усложнением конструктивных форм с учётом нелинейности деформирования с малоизученными проблемами разрушения и исчерпания несущей способности железобетонных конструкций [1].

Большие масштабы и сложность возводимых за последние годы новых видов железобетонных сооружений влекут за собой рост неопределенности в оценке их надежности, требует значительного развития численных методов их расчёта. Бурное развитие вычислительной техники и электроники, а также новых методов открывает широкие перспективы в этом направлении. Так, для широкого класса конструкции эффективно используются методы конечных и граничных элементов (МКЭ, МГЭ), для которых разработано большое количество программ, реализующих в основном, линейные упругие свойство материалов. Для учёта нелинейных свойств железобетона в практических расчетах, помимо создания более сложных программ, становиться, необходимыми уделять внимание более тесной оценкой основополагающих, фундаментальных свойств железобетона.

Методы расчета, используемые в нормативных документах разных стран, основаны преимущество на анализе равновесия внешних нагрузок и

внутренних предельных усилий в наклонных сечениях элементов. В некоторых случаях методы заменялись или дополнялись другими подходами, основанными на статистическом многофакторном анализе либо использующими различные модели аналогии. Такие модели обладают наглядностью и широко принимаются различными исследователями. Так, модификация метода фирменной аналогии, предложенной еще Мершем в начале XX веке, положена в основу современных рекомендации ЕКБ-ФИП по расчету железобетонных балок на срез. Некоторые недостатки статических методов и моделей - аналогии (идеализация расчетных схем, малая информативность, отсутствие физических представлений о механизмах поведения и.т.д.) легко устранимы при их сочетании с методом предельного равновесия. Это позволит избежать некоторых трудностей в его реализации, связанных с оценкой напряжений в бетоне и арматуре и определением внутренних усилий в элементе, включая стадию, близкую к разрушению.

Определение деформативности и трещиностойкости бетонных и железобетонных конструкций базируется на основе обычных тяжелых бетонов. Разрабатываются новые методы, новые технологии изготовления, используется огромные объемы железобетонных конструкций, но многие вопросы связанные с оценкой их жесткости несущей способности и надежности до сих нор остаются не решенными.

Реальных условиях эксплуатации даже при сравнительно низких уровнях нагрузок в бетоне развиваются трещины различной ориентации и глубины, конструкциях появляются анизотропия неоднородности деформирования. Все особенности деформирования материала можно изучается только в рамках математических моделей, полученных методами механики твёрдого деформируемого тела.

Методика экспериментального определения зависимости касательных сил зацепления в трещине от соответствующих смещений её берегов позволяет оценить жесткость и прочность контактного взаимодействия в трещине; - будет получены соответствующие выражения для оценки сдвиговой жесткости и предельного сопротивления контактного взаимодействия в трещине. Выявляется, что предельное сдвиговое сопротивление может быть выражено на основе прочностного критерия либо с помощью модифицированного критерия с установленными для каждого вида бетона константами, удовлетворяющими результатам испытаний; - реализация полученной структурно- имитационной модели контактного взаимодействия в трещине и возможность ее эффективного использования в нелинейных расчетах напряженно-деформированного состояния конструкций численными методами.

Металлический волокнистый монолит применяется в железобетонных конструкциях и сооружениях заводского изготовления. Хотя типичные размеры металлических волокон неоднородны и имеют различный, в основном используются металлические волокна различной формы: диаметр 0,2 ... 1,2 мм и длина 5 ... 12 см. Таким образом, экспериментально доказано,

что диаметр используемого металического волокна определяет трещины в композите: d-0.3 имеет характеристики локальных трещин при использовании растрескававшихся металлических волокон, их размер не превышает 1-3 мм, увеличиваясь, диаметр волокон до 0,9 мм такой же [3].

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ВЛИЯНИЕ ТРЕЩИНООБРАЗОВАНИЯ И АНИЗОТРОПИИ НА ПРОЧНОСТЬ И ДОЛГОВЕЧНОСТЬ ДИСПЕРСНО-АРМИРОВАННЫХ ЖЕЛЕЗОБЕТОННЫХ КОНСТРУКЦИЙ

Аннотация. *В последние годы для повышения прочности, трещиностойкости и абразивной стойкости бетона активно используются различные типы армирования, включая металлические волокна. Металлические волокна диаметром от 0,2 до 1,2 мм и длиной от 5 до 12 см применяются в железобетонных конструкциях для улучшения их механических характеристик. Экспериментальные исследования показали, что добавление металлических волокон в бетон значительно улучшает его трещиностойкость, а также сопротивление растяжению и изгибу. Волокна создают внутренний каркас в бетонной конструкции, повышая её устойчивость к разрушению, особенно в тонкостенных конструкциях, что позволяет сэкономить на фурнитуре и других материалах.*

Ключевые слова. *бетон, железобетон, металлические волокна, трещиностойкость, анизотропия, прочность на растяжение, прочность на изгиб, долговечность.*

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RESEARCH OF CRACK FORMATION AND ANISOTROPY IMPACT ON THE STRENGTH AND DURABILITY OF REINFORCED CONCRETE STRUCTURES

Abstract. *In recent years, various types of reinforcement, including metallic fibers, have been actively used to enhance the strength, crack resistance, and abrasion resistance of concrete. Metallic fibers with diameters ranging from 0.2 to 1.2 mm and lengths from 5 to 12 cm are applied in reinforced concrete structures to improve their mechanical properties. Experimental studies have shown that adding metallic fibers to concrete significantly improves its crack resistance, as well as its tensile and bending resistance. The fibers create an internal framework within the concrete structure, increasing its resistance to destruction, particularly in thin-walled constructions, allowing for savings on fittings and other materials.*

Keywords. *concrete, reinforced concrete, metallic fibers, crack resistance, anisotropy, tensile strength, bending strength, durability, fine-grained concrete.*

В последние годы для повышения прочности, трещиностойкости и абразивной стойкости бетона активно используются различные типы армирования, включая металлические волокна. Металлические волокна, диаметром от 0,2 до 1,2 мм и длиной от 5 до 12 см, применяются в железобетонных конструкциях для улучшения их механических характеристик. Экспериментально доказано, что добавление металлических волокон в бетон значительно улучшает его трещиностойкость, а также сопротивление растяжению и изгибу.

Металлические волокна способствуют образованию внутреннего каркаса в бетонной конструкции, что повышает ее устойчивость к разрушению. Особенно эффективными такие волокна становятся при армировании тонкостенных конструкций, что позволяет сократить расходы на фурнитуру и другие материалы. Для улучшения сцепления металлических волокон с цементной смесью разрабатываются различные конфигурации, такие как крюковые и волнистые волокна, что увеличивает прочность и долговечность железобетонных конструкций.

Металлические фибры, добавляемые в бетон, обеспечивают медленную деградацию материала, увеличивая его долговечность. При этом трещины в дисперсно-армированном бетоне появляются при гораздо более высоких деформациях, чем в обычном бетоне. Это делает такие материалы более эффективными для использования в строительстве, особенно для гидротехнических и дорожных сооружений.

Кроме того, для улучшения свойств бетона, в том числе его прочности на растяжение и усталостных характеристик, активно используется мелкозернистый бетон с добавлением металлических волокон. Эти смеси имеют улучшенные физико-механические свойства, такие как гидроизоляция, хладостойкость, жаростойкость и огнестойкость. Производство таких бетонов требует тщательно подобранных материалов и правильной технологии, включая использование воды с определенными характеристиками для приготовления бетонных смесей.

В зависимости от степени адгезии металла в цементной смеси разрабатываются различные конфигурации для увеличения сцепления металлических волокон. Особенно крюковый, волнистый и тд.

Известно, что в последние годы в гидротехнических сооружениях и дорожном строительстве страны используются высокопрочные бетонные и железобетонные конструкции. Дисперсное армирование металлической стружкой широко применяется, особенно при производстве мелкозернистого бетона[7].

Металлическую фибру добавляют в среднем 70 ... 200 кг на 1 м3 бетонной смеси (3 ... 9% по массе). Когда бетон дисперсно-армирован металлическими волокнами, его деградация происходит медленно. Трещины в бетоне возникают при гораздо более высоких деформациях, чем в обычном бетоне. Волокна образуют внутренний каркас бетонной конструкции, обеспечивая ее сопротивление растяжению [8].

Мелкозернистые фибрабетоны обладают более высокой прочностью на растяжение, изгиб, сдвиг, растрескивание, усталость и т. д., Чем обычный тяжелый бетон или железобетон с металлической арматурой, характеризуется высокими свойствами, такими как прочность, трещиностойкость, гидроизоляция, хладостойкость, жаростойкость и огнестойкость. Перед непосредственной заливкой бетона волокно смешивается, т.е. смесь производится прямо или косвенно на бетонном заводе, что является технологически оптимальным[5].

Процессы подготовки и испытания образцов простого и мелкозернистого стекловолокна с дисперсным армированием проводились в аккредитованной лаборатории «Испытания строительных изделий» Джизакского политехнического института. Лабораторные испытания портландцемента, входящего в состав компании «Джизак Цемент» показали его физико-механические свойства.

Прочность бетона, обычно используемого для гидротехнических сооружений и дорожных покрытий, должна быть не менее 20, 25 МПа в зависимости от категории дороги, а морозостойкость - не менее МР3150. Коэффициент вариации модуля крупности песка не должен превышать 10% для бетонов, используемых для гидротехнических сооружений. Поэтому рекомендуется добавлять отходы волокна, чтобы обеспечить заданную прочность без изменения расхода цемента. Общее остаточное количество щебня определяли по следующей формуле:

$$\mathrm{A}_i = a_{20} + .. a$$

$$A_{20} = 36\%; A_{10} = 80\%; A_5 = 100\%;$$

Пористость щебня определялась по следующей формуле:

$$\mathrm{П}_б = \left(1 - \frac{p_m}{p}\right) * 100\% = \left(1 - \frac{1680}{2700}\right) * 100 = 38\%$$

Влажность щебня определялась следующим образом:

$$W_n = \left(\frac{m_b - m_c}{m_c}\right) * 100\% = \frac{2400 - 2350}{2350} * 100 = 2.13\%$$

Вода для бетона. Для приготовления бетонной смеси обычно используется питьевая вода. Кроме того, для . бетонных смесей можно использовать проточную воду с водородным индексом pH> 4 и растворы различных солей, не превышающие требуемых нормативов. Количество солей в воде не должно превышать 5000 м г/л [8].Наиболее важным элементом технологии, определяющим эффективность волокна, является выбор металлического волокна. В настоящее время освоено производство металлических волокон (20 видов).

Сравнительные характеристики дисперсного армированного мелкозернистого бетона с добавками 2-3%, 5%, 7% фибры. Из них был выбран 5% фибробетон.

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ЯНГИ ЎЗБЕКИСТОНДА ИНСОНПАРВАРЛИК ҒОЯЛАРИНИНГ ТРАНСФОРМАЦИЯЛАШУВИ

Аннотация: *Мазкур мақолада инсонпарварлик ғоялари, инсонларнинг қадр-қимматини, ҳуқуқ ва эркинликларини ва ихтиёрини ҳурмат қилишга асосланган ахлоқий ва ижтимоий принципларга асосланган бўлади. Инсонпарварлик ғоялари негизида, янги Ўзбекистонда амалга оширилаётган туб кенг кўламли ислоҳотлар, мамлактимиз тараққиётини асл мохиятини белгилаб беради. Агар бу ғоялар давлат бошқарувида амалга оширилса, бу инсон ҳуқуқлари, ижтимоий барқарорлик ва умумий фаровонликни таъминлашга ёрдам беради. Жамиятни маънавий ахлоқий ва маданий ривожлантиришда, маънавий қадриятлар, миллий ғоя, маданий мерос, ўзбек халқи ва давлатчилик тарихини ҳамда таълимни узвийлик ва узлуксизлигини, баркамол авлод тарбиясини тадқиқ этиш дастурини такомиллаштириш истиқболи орқали амалга ошиши ёритилган.*

Калит сўзлар: *ғоя, юксалиш, қадр-қиммат, тенглик, адолат, эл-юрт, тараққиёт, давлат, жамият, инсон, барқарорлик, илм-фан.*

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TRANSFORMATION OF HUMANITARIAN IDEAS IN THE NEW UZBEKISTAN

Abstrakt: *This article discusses the ideas of humanism, based on moral and social principles based on respect for the dignity, rights and freedoms of people and their will. On the basis of humanism, the fundamental large-scale reforms being carried out in the new Uzbekistan determine the true essence of the development of our country. If these ideas are implemented in state governance, this will help ensure human rights, social stability and general well-being. The spiritual, moral and cultural development of society is realized through the perspective of improving the program of studying spiritual values, the national idea, cultural heritage, the history of the Uzbek people and statehood, as well as the coherence and continuity of education, the upbringing of a harmonious generation.*

Key words: *idea, rise, dignity, equality, justice, nation, development, state, society, human, stability, science.*

Кириш

Ғоя ўзи нима-ғоя бу инсон тафаккурини махсули бўлиб, хар бир инсон омилига кўра, бир аниқ мақсадга қаратилагн ғоя асосида ўз хаётини белгилайди ва шу аснода умр – гузаронликда яшайди.

“Ғоя фалсафий тафккур доирасида хилма-хил маъноларда талқин этилган тушунчалардан биридир. Бугунги кунда фалсафий тафаккур эришган натижаларга таяниб, ғоянинг моҳия-ти, гносеологик мақоми тўғрисида муайян умумий хулосаларга келинган. Илмий факт, муаммо, фараз, назария каби воқеликни акс эттириш, илмий билишнинг ўзига хос шакли, янги билим ва парадигма (система) сифатида чиқадиган ғояда воқелик бундан кейин қай йўналишда ўрганилиши зарурлиги ҳақидаги кўрсатма, мақсад ботиний тарзда мужассамлашган бўлади ва шу туфайли у улкан йўналтирувчилик ролини ўтайди. Ғояга хос бўлган хусусиятлар қараб чиқилганда ғоянинг тарихий тараққиётдаги ўрни янада ой-динлашади”[119].

Ғоянинг воқеликка мос келиши муҳим ва аниқ масалаладан бири хисобланади. Инсонпарварлик ғоялари эса бу, инсонларнинг қадр-қимматини, ҳуқуқ ва эркинликларини ва ихтиёрини ҳурмат қилишга асосланган ахлоқий ва ижтимоий принципларга асосланган бўлади. Инсонпарварлик ғоялари негизида, янги Ўзбекистонда амалга оширилаётган ислоҳотлар, мамлактимиз тараққиётини туб мохиятини белгилаб беради десак муболаға бўлмайди. Агар бу ғоялар давлат бошқарувида амалга оширилса, бу инсон ҳуқуқлари, ижтимоий барқарорлик ва умумий фаровонликни таъминлашга ёрдам беради. “Хозирги кунда бизнинг халқимиз ҳаётида ҳам янги тонг отмоқда. Бу- янги тараққиёт, юксалиш тонггидир.

Эл-юртимиз дунёдаги энг ривожланган давлатларга хос ҳаёт даражасига эришиш, янги жамият қуришдек улуғвор мақсадлар билан яшашмоқда. Мамалакатимизнинг замонавий ва жозибадор қиёфасини яратиш, Янги Ўзбекистон барпо этиш ватандошларимизнинг асосий мақсад-муддаосига айланди. Бу борада бир фикрни алохида таъкидлаш жоизки, кейинги йилларда ҳаётимизнинг барча сохаларида кенг қамровли ислохот ва туб ўзгаришлар амалга оширилмоқда ва муҳум ижобий натижаларга эришилмоқда”[120].

Бу ғоялар инсонлар ўртасида тенглик, адолат ва ҳурматни таъминлашга қаратилган бўлиб, уларнинг асосий мазмуни инсонни ҳамон ўз қадр-қимматига эга бўлган субъекти сифатида эътироф этиш, ва бунинг ортидан инсон ҳуқуқларига риоя қилишни таъминлашдан иборат бўлади. Инсонпарварлик ғояларининг айрим муҳим жиҳатлари қуйидагиларни ўз ичига олади:

- **ҳурмат ва қадр-қиммат бўлиб,** ҳар бир инсоннинг эҳтиёжларига, жамиятга қўшган ҳиссасига, таълим ва ахлоқий қимматларига қарамай, унинг инсон сифатидаги қадр-қимматига ҳурмат қилиш;

[119]Қиём Назаров.Ғоя. https://qomus.info/encyclopedia/cat-gq/goya-uz/ 23.06.2024.
[120]Мирзиёев Ш.М. Янги Ўзбекистон тараққиёт стратегияси. –Тошкент: Ўзбекистон. 2022й. – Б.6.

-тенглик ва адолат бу, барча инсонлар тенг ҳуқуқларга эга бўлиши, уларнинг оилавий, ижтимоий, миллий ёки диний мансублигидан қатъи назар адолатли муносабатда бўлиши;

- ҳуқуқ ва эркинликлар асносида, инсонларнинг асосий ҳуқуқлари — уйда тинч яшаш, ўзи танлаган касбда ишлаш, таълим олиш, ўз фикрларини эркин ифода этиш ва бошқа муҳим ҳуқуқлар ҳурмат қилиниши;

- яшаш шароити ва ижтимоий адолатда, инсонпарварлик ғоялари инсоннинг ҳуқуқларини ҳимоя қилиш билан бирга, унинг ҳаётининг янада яхши, адолатли ва барқарор бўлишини ҳам таъминлаш;

- хар бир инсоннинг хусусий эҳтиёжларига эҳтиром ила, бир инсоннинг ҳаётининг ўзига хос хусусиятларига риоя қилиш, унинг шахс сифатидаги ўзига хослигини қадрлашдан иборат бўлади. “Давлат ва жамият бошқарувида очиқлик ва адолатга асосланган, одамлар манфаатига хизмат қиладиган халқпарвар қарорлар қабул қилиш тизими яратилди. Энг мухуми, биз кўп йиллар давомида амал қилиб келинган “давлат – жамият – инсон” тамойилини ўзгартирдик.

Адабиётлар тахлили ва методология

Мамлакатимизда аввало инсон, кейин эса, жамият ва давлат манфаати барча харакатларимизнинг негизига қўйилди. Ҳаётимизда “Давлат - инсонлар учун” деган халқчил ғоя изчиллик билан қарор топиб бормоқда”[121].

Инсонпарварлик ғоялари фақат ўзининг ахлоқий тушунчаси билан чекланмайди, балки жамиятдаги ҳуқуқий, иқтисодий ва сиёсий механизмлар билан ҳам боғлиқ бўлади. Ҳозирги даврда, инсонпарварлик ғоялари кўплаб давлатларнинг миллий қонунлари ва халқаро ҳуқуқи асосидаги муҳум принципларига айланган. “Ровийлар дерларки, Подшоҳ оқ мармардан ажиб ховуз бунёд этибдию- “Ахли фуқаронинг хар бири эрта тонгда бир косадан сут келтириб ховузга тўксин” деб амир қилибди. Фармонни эшитган бир киши “Шунча минг одам орасида битта мен сут ўрнига сув олиб бориб тўксин, ким билиб ўтирибди”, деган қарорда сув кўтариб борибдию хайратга тушубди: ажабки, шахардаги бошқа одамлар ҳам айнан шу фикр, шу аҳд билан сув келтирган эканлар. Ривоятдан ибрат шуки, Ватан билан ўзни бир бутунликда деб хис этган, виждони покиза одамда Ватан фойдаси, тараққиёти учун мехнат қилиш иштиёқидан бошқа нарса бўлмаслиги ва керак”[122]лиги эътиборга олинган.

Жаҳонда миллатлараро тотувлик ва бағрикенглик, демократик жамиятнинг асосий тамойиллари илм-фан, ижтимоий ривожланиш муайян даврда барқарор ривожланишини кузатишимиз мумкин. Жамиятнинг ривожланиши учун янги имкониятлар очилади. Ғоя асосида янгича таълимотлар, концепциялар, нуктаи назарлар шаклланган бўлиб, янги ғоялар доим пайдо бўлади. Улар туфайли жамиятда содир булаётган ўзгаришлар, инновацион ва янги технологиялар жорий этилади.

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[121]Мирзиёев Ш.М. Инсон қадри, унинг ҳуқуқ ва эркинликлари, қонуний манфаатлари учун. –Тошкент,: O’zbekiston. 2022й. – Б.5.

[122]Тохир Малик. Одамийлик мулки. Sharq, –Тошкент,:2013й. – Б.898.

Тараққиёт ва юксак ривожланишга эришган давлатлар тажрибасига кўра, ҳар бир ҳалқ ўз олдига улуғ ва истиқболли мақсадларни қўйиши ва уни амалга ошириш жараёни билан жаҳон ҳамжамиятида муносиб ўрин эгаллайди. “Хаётимиз маъноси - ич-ичимиздан, қалбимиз тўридан келади. Бу борада Франкл шундай дейди: “Умуман олганда, инсон хаётининг маъноси нимадан иборатлигини бошқалардан сўрсмаслиги керак. Аксинча, ушбу савол ўзига берилишини англамоғи даркор. Бошқача айтганда хаёт хар бир шахснинг олдида шу саволни қўяди; ва инсон унга фақат ўз хаёти билан жавоб бериши мумкун. Саволга жавоб бериш учун киши масъулиятли бўлиши лозим”[123]. Зеро замонавий давлатнинг мақсади жамиятда ҳамжиҳатлик ва барқарорлик, инсон ҳуқуқ ва эркинликларининг самарали ҳимоя қилинишини таъминлашдан иборат бўлади. “Маълумки, келажакда интилиб яшайдигон ёш авлод сайёрамизда фаровон ҳаёт ва юксак тараққиёт барқарор бўлиши учун янги ғоялар ва ижодий рухдаги саъй – харакатларни амалга оширадиган беқиёс кучдир”[124].

Натижалар

Мамлакатнинг барқарор ривожланиши аввалambор, ундаги тинчлик ва барқарорлик, миллатлараро тотувлик ҳамда инсонпарварлик ғоялари, бағрикенглик муҳитининг сақланишига шарт-шароит ва имкониятлар яратишдан иборат. Бинобарин, Президент Шавкат Мирзиёев томонидан ишлаб чиқилган Янги Ўзбекистон тараққиёт стратегияси истиқболимиз тақдирини ҳал этувчи муҳим ва янги давр босқичини ифодаловчи миллий ғояга айланган. Иқтисодий равнақ ҳам жамият барқарор бўлсагина амалга ошади. Барқарорликнинг шундай бир шакли борки, у ижтимоий жараёнларнинг узлуксиз ва бир текис боришида Ўзбекистон Республикаси Президентининг 2017 йил 19 майдаги “Миллатлараро муносабатлар ва хорижий мамлакатлар билан дўстлик, инсонпарварлик ғоялари ва алоқаларини янада такомиллаштириш чора-тадбирлари тўғрисида”ги фармони муҳум асос бўлади.

Янги Ўзбекистон ҳудудида турли маданият ва цивилизациялар вакиллари, турли халқлар, этник гуруҳлар аралашиб, дўстлик ва ҳамжиҳатликда яшаб келмоқдалар. Улар орасида ҳар хил миллатларга мансуб аҳоли мавжуд бўлиб, улар мамлакатимизнинг барча фуқаролари қатори бир хил ҳуқуқ ва мажбуриятга эгадирлар. Ўзбекистонда турли миллат вакилларининг таълим олишлари, меҳнат қилишлари учун барча шарт-шароитлар яратилган бўлиб, республиканинг миллий таркиби ўзига хос хусусиятларга эга. Аҳолининг этник таркибида туб аҳоли устун мавқени эгаллайди.

Ўзбекистоннинг миллий-маданий турли туманлиги миллий ўзликни англашнинг ўсиши ва маънавий жиҳатдан қайта уйғониш билан чамбарчас боғликдир. Мамлакатнинг жаҳон ҳамжамиятида ўз мавқъени сақлаш

[123]Стивен Р.Кови. Муваффақиятли инсонларнинг 7 кўникмаси. Шахсий камолотнинг қудратли қуроли.Учунчи Нашр.–Тошкент,:2022й. – Б.146.
[124]Мирзиёев Ш.М. Yangi O’zbekistonda Erkin va Farovon yashaylik. –Тошкент,: O’zbekiston. 2023й. – Б.35.

жараёнида миллатлараро тотувлик ва ҳамжихатликни, фуқароларнинг ҳаёт турмуш - тарзини яхшилаш, демократияни мустаҳкамлаш ва ижтимоий адолатни таъминлашга қаратилган ўзгаришларни ўз ичига олади. Бу жараёнда барча соҳаларда инновациялар ва янгича ёндашувларга алохида эътибор қаратиш муҳим омил эканлигини таъкидлаш жоиз бўлади десак муболаға бўлмайди.

Мухокама

Янги Ўзбекистонда олиб борилаётган ислохотларда, миллий тотувлик ва фуқаролик жамиятининг ривожланиши, миллатлар ва этник гуруҳлар ўртасида ўзаро ҳурмат, ишонч, тотувликни қарор топтириш, демократик, кучли фуқаролик жамияти қуриш ва сиёсий барқарорликни таъминлашнинг ижтимоий-фалсафий омиллари катта аҳамият касб этади.

Ҳар бир миллат, элат ва халқ, ҳар қандай ижтимоий тузум ва давлат муайян бир тамойиллар ва қадриятлар асосида ҳаёт кечиради ҳамда ўз манфаатлари, орзу-умидлари, мақсад-интилишларини кўзлаб ҳаракат қилади. Халқ ўзининг тарихий тараққиётида муайян бир ғоялар ва мафкураларга таянган ҳолда ривожланиб, тараққий этиб боради. Лекин инсонпарварлик ғоялари доимо жамиятдаги турли миллат, элат ва халқларнинг умумий манфаатларини ўзида ифодалаб, ижтимоий тараққиётнинг асосий йўналиши ва мақсад-муддаоларини ўзида ифодалайди.

Янги Ўзбекистон сиёсатида тинчлик ва барқарорликни таъминшлаш ва инсонпарварлик ғоялирининг ўзига хос устивор вазифаларини ишлаб чиқишга доир кўплаб тадқиқот ишлари ўтказилган ва бугунги кунда ҳам изчил ўрганилиб келинмоқда.

Янги Ўзбекистон ижтимоий сиёсатида тинчлик ва барқарорлик омилларини таъминшлаш ва инсонпарварлик ғоялари трансформациясининг инсон омилига доир Ғарб ва МДҲ мамлакатларида кўплаб тадқиқотлар олиб борилмоқда. Жумладан Янги Ўзбекистон сиёсатига оид педагогик-психологик ва социологик томонлари ва ижтимоий фалсафий жиҳатларига хос бўлган кўплаб тадқиқот келтириш мумкун. Хусусан, ижтимоий-фалсафий жиҳатлари ва ўзига хос хусусиятлари бўйича мустақил давлатлар ҳамдўстлиги мамлакатларининг илмий тадқиқот марказларида тинчлик ва барқарорлигига доир фундаментал тадқиқотлар узлуксиз равишда тадқиқ этилиши одатга айланган бўлиб, бу борада Н.Б.Агабаян, Э.Н.Якубов, Т.Болотина, С.Н.Глазачев, М.И.Рожков, М.А.Ковальчук, Г.Д.Дмитриев, Д.В.Зиновьев, Л.И.Антонова, Н.А.Цветкова, М.Золотухин, П.Ф.Комогоров, В.М.Куницина, Н.Л.Оконешникова, М.С.Мириманова, В.Н.Павлов, Н.А.Саблина, И.С.Якиманская, В.А.Ситаров, Л.А.Шкатова, Э.Соколова, Л.В.Строгановаларни киритиш мумкин. Ғарб мамлакатларида М. Наттурно, Г.Айзенк, Б.Бовден, Ж.Вардлау, Е.Гоффман, Э.Геллнер, М.Дженкинс, С.Добсон, Э.Риэрдон, Ж.Эллпорт, Д.Жакобс, Э.Кадоури, С.Мендус, У.Ўзкиримли, Б.Шафер, С.Шилман, Э.Эриксен ва бошқаларнинг тадқиқот ишларида инсонпарварлик ғоялари, тинчлик ва барқарорлик, толерантлик, бағрикенглик, байналминалликнинг назарий асослари, инсонларнинг бир-

бирларини тушунишлари ва ўзаро ишонч; миллатларо маданиятлар, қадриятлар, билим ва технологияларнинг ўзаро сингиб бориши бўйича бир қанча тадқиқотларни кўрсатиб ўтиш мумкин бўлади.

Ижтимоий ҳамкорликка асосланган, эркин, демократик жамият барпо этишни кўзлаган давлатимизда миллий мафкура аҳолининг барча қатламларини жипслаштириб, умумманфаат ва ягона мақсад йўлида ҳаракатга чорлайди. Бундай мафкурада зиддиятли жиҳатлар эмас, умуминсоний тамойиллар кучайиб боради. Ҳар қандай мафкура ўз олдига муайян мақсадларни қўяди. Бу мақсадлар пировард натижага эришишнинг йўллари, восита ва усулларини белгилайди. Жамиятни маънавий ахлоқий ва маданий ривожлантиришда, маънавий қадриятлар, миллий ғоя, маданий мерос, ўзбек халқи ва давлатчилик тарихини ҳамда таълимни узвийлик ва узлуксизлигини, баркамол авлод тарбиясини тадқиқ этиш дастурини такомиллаштириш истиқболи орқали амалга ошади.

Янги Ўзбекистон ижтимоий ҳаёти ва сиёсатида инсонпарварлик ғоялари *трансформациялашувини* амалга оширишда тинчлик ва барқарорликни таъминлаш, ва инсон омилига хос бўлган қарашлар орқалигина, мамлакатда муаммоларни ҳал қилишга кўмак берадиган илмий-назарий, маънавий-маърифий томонларини асослаб беришдан иборат бўлади.

Инсонпарварлик ғоялари янги Ўзбекистоннинг тинчлик ва барқарорлигини таъминлашда инсон омилига оид илмий-методологик асослари, ижтимоий-фалсафий моҳияти, хусусиятларини ёритиб беради.

Ўзбекистон ҳудудида истиқомат қилувчи барча миллат ва элатларнинг тиллари, урф-одатлари ва анъаналарига нисбатан ҳурмат билан муносабатда бўлиб, уларнинг ривожи учун шароит яратилганлиги кўриш мумкун. Бу эса ўз навбатида ижтимоий ва сиёсий ҳаётда барча миллат ва элат вакилларининг ҳар томонлама иштироки ҳамда муҳитини шакллантириш ва имкониятларини очиб беришига замин яратади.

Хулоса

Янги Ўзбекистон давлат бошқарувида инсонпарварлик ғоялари трансформациясига оид илмий-методологик асослари ҳамда ижтимоий-фалсафий категориялари негизида янг Ўзбекистон ҳудудида истиқомат қилувчи миллат ва элатларнинг тиллари, урф-одатлари ва анъаналарига нисбатан ҳурмат билан муносабатда бўлиб, давр руҳияти билан боғлиқ сиёсий-ҳуқуқий, ижтимоий-маданий асослари ижтимоий-фалсафий жиҳатдан муҳум ахамиятга эга хисобланади. Хулоса ўрнида шуни таъкидлаш мумкунки Ўзбекистонда инсонпарварлик ғоялари трансформациялашувидаги ижтимоий ва сиёсий ҳаётнинг барча жабхаларида миллат ва элат вакилларининг ҳар томонлама иштирокини шакллантириш имкониятларини дифференциал ёндашувлар асосида ўзаро диалектик алоқадорлиги асослашда ўзига хос жараёнларни ўз ичига олади. Жараёнда билишнинг тарихийлик ва мантиқийлик тамойили негизида мамлакатимизда ижтимоий, миллий, ирқий ва диний адоватни тарғиб қиладиган партиялар ва жамоат бирлашмалари тузилишига қарши курашиш орқали, мамлакатимизда инсонпарварлик

ғоялари асосида ижтимоий барқарорликка эришиш, миллатлараро ҳамжиҳатликни таъминлаш ҳамда умуммиллий манфаатларни илгари суриш мумкинлиги катта ахамиятга эга.

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ПРИМЕНЕНИЮ РЕГИОНАРНЫХ МЕТОДОВ АНЕСТЕЗИИ ПРИ РАЗЛИЧНЫХ ОПЕРАТИВНЫХ ВМЕШАТЕЛЬСТВАХ

Аннотация: *Статья посвящена применению регионарных методов анестезии при различных оперативных вмешательствах выполненных в условиях РНЦЭМП АФ г.Андижан. Эпидуральная и спинальная анестезия с применением современного анестетика бупивакаина показала свою эффективность и безопасность при операциях на нижнемэтаже брюшной полости и нижних конечностях. Анестезия с использованием бупивакаина обеспечивает более стабильные показатели гемодинамики, чем при использовании лидокаина. Интерес к применению методов регионарной анестезии при хирургических и травматологических операциях всегда был достаточно высоким. Все методы общей и регионарной анестезии имеют свои преимущества и недостатки. Методики проведения вариантов регионарной анестезии, их преимущества, недостатки, осложнения и влияние на организм хорошо описаны в литературе (1,2,3). Различные авторы отдают предпочтение эпидуральной анестезии (ЭА), спинальной анестезии (СА), комбинированной спинально-эпидуральной анестезии (КСЭА) в самостоятельном виде или в сочетании с общей анестезией (ОА) в условиях искусственной вентиляции легких (ИВЛ) (4,5,6). Преимуществами регионарных методов анестезии в сравнении с ОА являются полная блокада болевой импульсации из зоны анестезии, снижение общего периферического сопротивления (ОПСС), и главное, возможность сохранения сознания и самостоятельного дыхания, что позволяет избежать осложнений связанных с ОА и ИВЛ (7). В сравнении с ЭА, СА характеризуется четкой идентификацией субарахноидального пространства по наличию ликвора, меньшим количеством местного анестетика, быстрым наступлением эффекта. ЭА характеризуется возможностью выполнения на любом уровне, а СА только в поясничном отделе. Пролонгированная ЭА стала весомым компонентом послеоперационного обезболивания и интенсивной терапии. С появлением техники катетеризации эпидурального пространства и возможности дополнительного введения анестетика, ЭА стала пользоваться большей популярностью, ввиду того, что СА ограничена временем действия местного анестетика (8,9,11). Эту проблему решает вариант сочетанного использования СА и ЭА, сначала в виде двухуровневой методики, а затем и разработки методики комбинированной спинально-*

эпидуральной анестезии (КСЭА), «игла через иглу», при пункции на одном уровне. КСЭА сочетает в себе быстрое наступление эффекта как при СА, и возможность длительного поддержания анестезии, как при ЭА (4,10). За последние десятилетия популярность КСЭА значительно возросла. Если в 90-х годах прошлого века этаметодика была фактически неизвестна, то на сегодняшний день КСЭА используется широко. КСЭА препятствует развитию тканевого метаболического ацидоза, повышению кортизола в крови, активности трансаминаз, ослабляет активность системы комплемента, снижает интраоперационную кровопотерю, предупреждает развитие послеоперационного пареза кишечника. Данные эффекты сочетанной КСЭА связаны с эффективной блокадой симпато-адреналовой и гипоталамогипофизарно-адренокортикальной системы (10). С появлением современных местных анестетиков длительного действия (бупивакаин, ропивикаин) возможности использования СА значительно расширились (7). Цель исследования - изучить эффективность регионарных методов при хирургических операциях на нижнем этаже брюшной полости и травматологических и сосудистых операциях на нижних конечностях.

Ключевые слова: *регионарной анестезия, симпато-адреналовой система, гипоталамогипофизарно-адренокортикальной система, бупивакаин, ропивикаин.*

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APPLICATION OF REGIONAL ANAESTHESIA METHODS IN VARIOUS SURGICAL INTERVENTIONS

Abstract:*The article is devoted to the use of regional methods of anaesthesia in various surgical interventions performed in the RSCEMC AB Andijan. Epidural and spinal anaesthesia with the use of modern anaesthetic bupivacaine has shown its effectiveness and safety in operations on the lower abdominal cavity and lower extremities. Anaesthesia with bupivacaine provides more stable hemodynamic parameters than with lidocaine. Interest in the use of regional anaesthesia methods in surgical and traumatological operations has always been quite high. All methods of general and regional anaesthesia have their advantages and disadvantages. Methods of regional anaesthesia options, their advantages, disadvantages, complications and effects on the body are well described in the literature (1,2,3). Various authors give preference to epidural anaesthesia (EA), spinal anaesthesia (SA), combined spinal-epidural anaesthesia (CSEA) alone or in combination with general anaesthesia (GA) under artificial ventilation (AV) conditions (4,5,6). The advantages of regional anaesthesia methods in comparison with OA are complete*

blockade of pain impulsation from the anaesthesia zone, reduction of total peripheral resistance (TPR), and most importantly, the possibility of preserving consciousness and independent breathing, which avoids complications associated with OA and ventilator (7). Compared to EA, SA is characterised by clear identification of the subarachnoid space by the presence of liquor, less local anaesthetic, and rapid onset of effect. EA is characterised by the possibility of performing it at any level, while SA only in the lumbar region. Prolonged EA has become a significant component of postoperative anaesthesia and intensive care. With the advent of the epidural catheterisation technique and the possibility of additional anaesthetic administration, EA has become more popular, due to the fact that SA is limited by the time of local anaesthetic action (8,9,11). This problem is solved by the combined use of SA and EA, first as a two-level technique, and then by the development of combined spinal-epidural anaesthesia (CSEA), 'needle through needle', with puncture at the same level. CSEA combines a rapid onset of effect as with SA and the possibility of prolonged maintenance of anaesthesia as with EA (4,10). The popularity of CSEA has increased significantly over the last decades. Whereas in the 1990s this technique was virtually unknown, today CSEA is widely used. CSEA prevents the development of tissue metabolic acidosis, increased blood cortisol, transaminase activity, weakens the activity of the complement system, reduces intraoperative blood loss, and prevents the development of postoperative intestinal paresis. These effects of combined CSEA are associated with effective blockade of sympatho-adrenal and hypothalamic-pituitary-adrenocortical system (10). With the advent of modern long-acting local anaesthetics (bupivacaine, ropivicaine), the possibilities of using CA have significantly expanded (7). The aim of the study was to investigate the effectiveness of regional techniques in surgical operations on the lower abdomen and traumatological and vascular operations on the lower extremities.

Keywords: *regional anaesthesia, sympatho-adrenal system, hypothalamic-pituitary-adrenocortical system, bupivacaine, ropivicaine.*

Материалы и методы исследования. Данные исследования основаны на результатах работы отделения анестезиологии и реаниматологии РНЦЭМП АФ г.Андижана. Регионарные методы анестезии внедрены с 1985 года. До 1999-2005 г.г. методы регионарной анестезии применялись редко. Основным препаратом для ЭА был 2% лидокаин. С появлением новых одноразовых наборов фирмы B.Braun для проведения ЭА и СА, и современных местных анестетиков Бупивакаина и Ропивикаина наблюдается неуклонный рост процента регионарной анестезии в структуре плановых и экстренных анестезий. За последние 3 года было выполнено свыше 1000 регионарных анестезий с использованием новых препаратов. В данном исследовании использованы данные оперативного лечения 198 взрослых пациентов в 2023-2024 гг., оперированных в плановом и экстренном порядке по поводу хирургических, травматологических и сосудистых заболеваний. Средний возраст больных составил 40,5±14,0 лет, средний вес пациентов

составил 72,9±10,7 кг, средний рост пациентов составил 169,2±7,4 см. Основная масса оперативных вмешательств выполнялась в плановом порядке. Распределение пациентов по видам операций представлено в таблице 1.

Таблица 1 Распределение пациентов по структуре оперативных вмешательств и видам анестезии

Название операции	Эпидур. анестезия	Спинальн. анестезия	Плано - вых	Экстренных
Аппендэктомия	**28**	**20**	**-**	**48**
Грыжесечение, пластика пахово-мошоночной грыжи	**33**	**13**	**25**	**21**
Геморроидэктомия	**9**	**9**	**18**	**-**
Иссечение свища прямой кишки, сфинктеропластика	**3**	**8**	**11**	**-**
Иссечение анальной трещины	**-**	**5**	**5**	**-**
Чрезпузырная аденомэктомия	**11**	**2**	**13**	**-**
Трансуретральная резекция простаты	**16**	**9**	**25**	**-**
Открытый остеосинтез бедренной кости	**9**	**-**	**9**	**-**
Радикальная флебэктомия	**6**	**17**	**23**	**-**
Всего	**115**	**83**	**129**	**69**

У экстренных травматологических пациентов применяли только ОА (общая анестезия), поскольку состояние травматического шока не позволяло выполнить регионарную анестезию. В условиях травматического шока ЭА и СА могут вызвать декомпенсацию кровообращения и состояние неуправляемой гипотонии. У экстренных хирургических пациентов с ущемленными паховыми грыжами, острым аппендицитом, проктологическими заболеваниями при отсутствии явлений перитонита выполняли ЭА или СА. Все пациенты проходили стандартное предоперационное обследование, включающее общий анализ крови и мочи, биохимический анализ крови, коагулограмму, электрокардиограм му, рентгенографию грудной клетки, консультации смежных специалистов. Обязательно выясняли аллергологический анамнез. Степень анестезиологического риска оценивали по шкале Американской ассоциации анестезиологов (ASA). Средняя степень риска составила 1,5±0,8 баллов, что говорит, что в исследование включены относительно здоровые люди с несерьезными сопутствующими заболеваниями. По методам анестезии

пациенты были распределены на 3 группы: 1. Эпидуральная анестезия на основе лидокаина (n=35); 2. Эпидуральная анестезия на основе бупивакаина (n=70); 3. Спинальная анестезия на основе бупивакаина (n=73). Для проведения ЭА использовали наборы фирмы «B.Braun» (Германия) и Balton (Польша). Пункцию эпидурального пространства проводили подместной анестезии 0,25% новокаином на уровне L1 -L2 , L2 -L3 иглой 18G в положении пациента лежа на боку. Осуществляли катетеризацию эпидурального пространства, направляя катетер вверх или вниз в зависимости от вида оперативного вмешательства. Затем вводили тест дозу лидокаина 80 мг (*MERRYMED FARM, Узбекистан*) или бупивокаина 15 мг (Grindex, Латвия). Наблюдали пациента в течение 5 минут. Если не было признаков наступления спинальной блокады, то вводили основная дозу бупивакаина 75-100 мг в сочетании с фентанилом 0,1 мг, или лидокаина 240 – 400 мг. В случае развития спинального блока, начинали операцию и анестезию вели как СА. Катетер удаляли по окончании операции и использовали его для дополнительного введения половины спинальной дозы анестетика. Анестезию начинали после регистрации исходных показателей центральной гемодинамики и предварительной инфузии раствора NaCI 0,9% или коллоидных растворов из расчета 10-15 мл/кг. При снижении артериального давления вследствие вазоплегического действия ЭА, на фоне продолжающейся инфузионной нагрузки внутривенно болюсно вводили мезатон в разведении. Последующие дозы бупивакаина, составляющие половину от первоначальной, вводили эпидурально через 120-180 мин. Дополнительные дозы лидокаина вводили каждые 40-50 минут, также в половинной дозе от начальной. На протяжении всей операции проводили инсуффляцию увлажненной воздушно-кислородной смеси. В случае необходимости медикаментозной седации, у части пациентов для устранения эффекта «присутствия на операции» внутривенно вводили брюзепам в дозе 0,05-0,1 мг/кг-1 каждые 30-60 мин. Эпидуральный катетер оставляли для послеоперационного обезболивания и удаляли на следующие сутки после операции. Для проведения СА применяли специальные иглы фирмы «B.Braun», Германия. У всех пациентов пункцию субарахноидального пространства проводили подместной анестезией кожи и подкожной клетчатки 0,25% новокаином по срединной линии позвоночного столба. Производили пункцию спинномозгового канала на уровне L3 -L4 . Спинальную анестезию проводили раствором бупивакаина в дозе 15-20 мг. Однократного введения бупивакаина хватало на 2-3 часа эффективного обезболивания. Лидокаин для проведения СА не применяли в виду кратковременности его действия. Исследование проводили на следующих этапах операции и анестезии: - Исходные данные; - Начало операции; - Основной (травматичный) этап операции; - Конец операции. Регистрировали показатели гемодинамики: артериальное давление систолическое (СистАД), диастолическое (ДАД), частоту сердечных сокращений (ЧСС), объем инфузии, потребность в обезболивающих препаратах в послеоперационном периоде. Статистическую обработку про водили с помощью программы

Microsoft Excel. С определением достоверности отличий по t-критерию Стьюдента. Разницу считали достоверной при $p<0,05$.

Результаты и их обсуждение. Результаты работы отражены в таблице 2. Исходные показатели гемодинамики в группах достоверно не отличались, и находились на верхней границе нормы. На втором этапе, после начала действия ЭА или СА происходило достоверное снижение СистАД, ДАД и урежение ЧСС, что связано с фармакологическим эффектом ЭА и СА. Снижение происходило в пределах физиологически допустимых значений. На травматичном этапе в 1 и 2 группах СистАД достоверно повысилось, данная тенденция сохранялась и на 4 этапе. К концу операции СистАД, ДАД достоверно повышались, в сравнении со 2 и 3 этапами, но продолжали оставаться ниже исходных данных. ЧСС во 2 группе на 2 и 3 этапе были одинаковы, у несколько увеличивалась на 4 этапе. На 3 и 4 этапах в 1 группе ЧСС было одинаковым. В 3 группе ЧСС постепенно повышалось на 2, 3 и 4 этапах. В общей тенденции изменения гемодинамики были однотипными и соответствовали клинике ЭА и СА. В сравнении между группами следует отметить, что при СА снижение СистАД и урежение ЧСС было менее выраженным, чем при ЭА в 1 и 2 группах. Это связано с меньшей дозой анестетика при СА, и отсутствии общего действия на организм. Наиболее выраженная брадикардия отмечалась в группе с применением лидокаина для ЭА. При выраженной брадикардии необходимо было введение атропина 0,1% по 0,5 мл. В редких случаях, при сочетании брадикардии и гипотонии вводили адреналин 0,1% по 0,1 – 0,2 мл в разведении. При анализе гемодинамики во всех группах, следует отметить, что и ЭА и СА показали себя, как эффективные и безопасные методы обезболивания. С целью предотвращения сосудистого коллапса до начала введения тест-дозы проводили предварительную инфузию NaCl 0,9% в объеме не менее 800 мл, с последующей инфузией не менее 1600 мл жидкостей во время проведения операции под контролем гемодинамики. Следует отметить, что объемная коррекция гемодинамики не всегда позволяла стабилизировать СистАД, что связано с симпатической блокадой и резорбтивным действием местных анестетиков. СА на основе бупивакаина показала себя как метод с наименьшим влиянием на гемодинамику. При правильном расчете дозы анестетика гемодинамические сдвиги были минимальны. Однако СА имеет один существенный недостаток, связанный с ограничением времени действия анестетика. Времени для проведения данных оперативных вмешательств в условиях спинальной анестезии бупивакаином в дозе 15 мг хватало с избытком. Из осложнений СА отмечали головные боли у 4 пациентов, и попадание в нервные корешки у 2 пациентов. Положительным моментом ЭА была возможность пролонгированного проведения анестезии и возможность проводить эффективное обезболивание в послеоперационном периоде. Из осложнений ЭА отмечали частичный блок и мозаичность анестезии в 3 случаях в 1 группе. При использовании бупивакаина анестезия всегда была эффективной.

Таблица 2 Динамика основных показателей на этапах исследования

Показатель	Группы	1 этап	2 этап	3 этап	4 этап
Систолическое артериальное давление (мм.рт.ст.)	1 группа	135±19	84±14*	91±14* **	100+15* ** ***
	2 группа	138±20	86+13*×	94±14* **	101±12* ** ***
	3 группа	139±18	99±11 ×× ×××	93±22*	107±15* ** *** ×× ×××
Диастолическое артериальное давление (мм.рт.ст.)	1 группа	77±10	45±8*	44±8*	49±8* ***
	2 группа	75±15	45±6*	51±7* ** ×	53±6* **
	3 группа	75±8	45±8*	44±5* ××	53±6* ** *** ×××
Частота сердечных сокращений (уд/мин)	1 группа	84±14	63±8*	75±9* **	75±9* **
	2 группа	86±14	71±9* ×	70±12*	79±8* ** *** ×
	3 группа	85±12	67±10* ××	75±9* **	79±9* ** *** ××

* - p<0,05 в сравнении с 1 этапом
** - p<0,05 в сравнении со 2 этапом
*** - p<0,05 в сравнении с 3 этапом
× - p<0,05достоверность отличий между 1 и 2 группой
×× - p<0,05 достоверность отличий между 2 и 3 группой
××× - p<0,05 достоверность отличий между 1 и 3 группой

Основная масса пациентов из операционной переводилась сразу в профильные отделения. Работ, посвященных сравнительной оценке видов регионарной анестезии при различных видах оперативных вмешательств, выполнено достаточно много (11, 12, 13, 14). В данной работе представлен опыт в условиях многопрофильной больницы, где выполняются самые различные виды оперативных вмешательств. Широкое внедрение ЭА и СА в ежедневную анестезиологическую практику позволяет сократить нагрузку на реанимационное отделение и палату пробуждения, обеспечить комфортные условия для работы хирурга и пациента.

Выводы: Эпидуральная анестезия на основе бупивакаина обеспечивает эффективное и безопасное обезболивание при операциях на нижнем этаже брюшной полости и нижних конечностях. Спинальная анестезия на основе бупивакаина обеспечивает более стабильную гемодинамику чем эпидуральная анестезия. Эпидуральная анестезия предпочтительна при необходимости пролонгировании времени анестезии и послеоперационного обезболивания.

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О РОЛИ АФФЕРЕНТНОГО НЕЙРОНА В ПОДДЕРЖАНИИ СТРУКТУРНОЙ ЦЕЛОСТНОСТИ И АДЕКВАТНОЙ ДИФФЕРЕНЦИРОВАННОСТИ ТКАНЕЙ

Резюме: *В статье изучены динамика изменения активности неспецифической эстеразы в больших и малых альвеолярных клетках дифференцированного легкого кошки. Чувствительная денервация легких у животных класса млекопитающих достигалась двусторонней экстирпацией соответствующих спинномозговых узлов, а также удалением блуждающего нерва. Чувствительная денервация легких вызывает появление в его тканях комплекса типичных изменений.*

Ключевые слова: *собаки, кошки, кролики, крысы, клетки, ядро, денервация, дифференцированность, ткань, легкие.*

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ON THE ROLE OF AFFERENT NEURON IN MAINTAINING STRUCTURAL INTEGRITY AND ADEQUATE DIFFERENTIATION OF TISSUE

Abstract: *The article studies the dynamics of changes in the activity of nonspecific esterase in large and small alveolar cells of differentiated cat lung. Sensory denervation of the lungs in mammals was achieved by bilateral extirpation of the corresponding spinal nodes, as well as by removing the vagus nerve. Sensory denervation of the lungs causes the appearance of a complex of typical changes in its tissues.*

Keywords: *dogs, cats, rabbits, rats, cells, nucleus, denervation, differentiation, tissue, lungs.*

Ввдение. Данные литературы свидетельствуют о том, что появление гигантских клеток характерно для различных видов малодифференцированных тканей [1]. Хронические воспалительные явления в легких человека, не поддающиеся терапии антибиотиками, могут быть в ряде случаев следствием патологического процесса, вызванного нарушением проводимости нервных стволов [4,2]. Морфологические изменения в тканях

после деафферентации являются уже конечным результатом деструктивных поражений, начало которых лежит в нарушении обменных процессов. Изменение обменных процессов в денервированных тканях изучалось многими исследователями [3].

Цель исследования. Изучить о роли афферентного нейрона в поддержании структурной целостности и адекватной дифференцированности тканей.

Материалы и методы исследования. В качестве экспериментальных животных нами были использованы собаки, кошки, кролики, крысы. Объектом исследования служила ткань легкого. Чувствительная денервация легких у животных класса млекопитающих достигалась двусторонней экстирпацией соответствующих спинномозговых узлов, а также удалением блуждающего нерва. Применялись как обычные методики окраски гематоксилин-эозином, по Ванизону, так и специальные нейрогистологические - по Бильшовскому-Грос в модификации Лаврентьева.

Результаты исследования. Полученные данные указывают на возникновение в тканях легких у экспериментальных животных этого класса однотипных изменений при обоих видах операции. У всех видов экспериментальных животных микроскопические изменения в тканях, дифференцированных легких однотипны. Они характеризуются в первую очередь резкими вазомоторными расстройствами. Все слои сосудистой стенки обнаруживают ряд морфологических изменений. Клетки эндотелия выглядят набухшими, гипертрофированными. Ядра гладкомышечных клеток часто удлиняются, перешнуровываются, принимают извитую форму. Экссудация из сосудов жидкой части крови приводит к отеку тканей легкого. Экссудативные явления наиболее выражены у грызунов. Одной из характерных черт деафферентационных изменений у всех экспериментальных животных является проникновение в ткани из расширенных сосудов полинуклеаров с образованием в различных участках легкого массивных лейкоцитарных инфильтраций. Наибольшая интенсивность этого явления наблюдается на 10-12 сутки после операции. Несмотря на последующее снижение инфильтрации, она продолжает оставаться выраженной и во все последующие сроки наблюдения. Лейкоцитарная инфильтрация тканей легких наиболее интенсивна у грызунов и кошек. Лимфоидный характер фильтрацляется очевидно, одной из причин умеренной Рон фильтрации тканей псевдоэозинофильными лейкоцитами у представителей этого класса животных. Следует иметь в виду, что при десимпатизации органов, несмотря на расширение просвета сосудов, исследователи никогда не наблюдали выраженного отека и инфильтрации тканей лейкоцитами. Очевидно, в этом процессе имеют значение-факторы, каким-то образом связанные со спецификой трофической функции различных видов нервных волокон. На фоне сосудистых расстройств, отека и инфильтрации тканей полиморфно ядерными лейкоцитами отмечается появление ряда признаков, указывающих на нарушение нормальной

структуры тканевых компонентов легких. Уже к концу первой недели после деафферентации просвет бронхов, особенно мелкого калибра, заполнен слизью, содержащей лейкоциты, макрофаги и клетки отпавшего эпителия. В одних участках бронхиального эпителия наблюдается переход его из многорядного в однорядный. В других случаях видны картины пролиферации клеток бронхиального эпителия. Бокаловидные клетки гипертрофируются, их количество резко возрастает. Для бронхиальных желез характерно угасание секреции. Пролиферирующие железистые клетки могут полностью или частично закрывать просвет железы. В легких грызунов и птиц это явление наступает раньше и выражено интенсивнее, чем у собак и кошек. Основные элементы лимфоидных скоплений представлены различной степени зрелости лимфоцитами и ретикулярными клетками. Последние сильно варьируют по величине, их цитоплазма становится более базофильной. Отмечается резкое увеличение количества митозов ретикулярных клеток. Как в области лимфоидных скоплений, так и в других участках легочной паренхимы значительно увеличивается количество плазматических и тучных клеток. Характерным для деафферентационных изменений является появление в тканях гигантских клеток. В интактных легких млекопитающих гигантские клетки встречаются редко. В легких не оперированных животных других классов мы их никогда не встречали. У грызунов встречаются также гигантские клетки с несколькими периферически расположенными мелкими ядрами. Наряду с изменениями паренхимы, отмечаются определенные нарушения и в строме дифференцированных легких. Клетки фибропластического ряда становятся полиморфными, их ядра варьируют по величине, ядрышки укрупняются. Изменения волокнистых структур пери васкулярной, перибронхиальной и септальной соединительной ткани могут быть деструктивного и формообразовательного характера. В отдельных случаях наблюдается фрагментация части коллагеновых волокон. Деструктивные изменения эластических волокон наступают в более поздние сроки и заключаются в потере ими извитой формы, иногда глыб чатом распаде. При длительных наблюдениях отмечается некоторое уменьшение интенсивности деафферентационных изменений. Наблюдаемые морфологические изменения в тканях дифференцированных легких свидетельствуют о появлении признаков, указывающих на утрату тканевыми элементами высокой специфичности. Многочисленные исследования показывают, что в тех случаях, когда наблюдается появление малодифференцированных клеток, в них отмечается и увеличение ядерно-плазматического отношения. Увеличение ядерно-плазматического отношения при дифференцировании клеток связывается с потерей ими специализации и выполнении главным образом вегетативной функции. Анализируя данные цитофизиологического изучения клеток тканей, лишенных чувствительной иннервации, можно прийти к выводу, что укорочение латентного периода, увеличение пролиферативной и митотической активности.

Вывод. Таким образом, возникновение однотипных изменений в тканях легких после их чувствительной денервации у животных различных видов, семейств и классов свидетельствует о важной роли и ведущем значении чувствительного нейрона в поддержании структурной целостности и адекватной дифференцированности иннервируемых им участков организма. Наиболее важной чертой деафферентационных изменений является приобретение клеточными элементами малодифференцированного характера и утрата ими черт высокой морфофункциональной специфичности.

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ФУНКЦИОНАЛЬНАЯ КЛАССИФИКАЦИЯ ГОРОДСКИХ ПОСЕЛКОВ РЕСПУБЛИКИ КАРАКАЛПАКСТАН

Аннотация: *Статья посвящена функциональной классификации городских поселений Республики Каракалпакстан. Рассмотрены экономические направления и роль городов региона в социально-экономическом контексте. Особое внимание уделено природно-географическим, экономическим и демографическим факторам, которые влияют на специализацию городов. В статье представлена классификация городских поселении на основе их экономической и социальной функции, что позволяет выделить пять основных типов. В работе рассмотрены как традиционные подходы к классификации городских поселении, так и новые, разработанные учеными Каракалпакстана.*

Ключевые слова: *Каракалпакстан, урбанизация, функциональная классификация, городские поселения, экономическое развитие, промышленность, транспорт, ресурсы.*

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FUNCTIONAL CLASSIFICATION OF URBAN TOWNS OF THE REPUBLIC OF KARAKALPAKSTAN

Annotatsion: *The article focuses on the functional classification of urban settlements in the Republic of Karakalpakstan. It examines the economic directions and roles of the region's cities in a socio-economic context. Special attention is given to natural-geographical, economic, and demographic factors that influence the specialization of cities. The article presents a classification of urban settlements based on their economic and social functions, identifying five main types. The study considers both traditional approaches to classifying urban settlements and new ones developed by Karakalpakstan scholars.*

Keywords: *Karakalpakstan, urbanization, functional classification, urban settlements, economic development, industry, transport, resources.*

Республика Каракалпакстан отличается с точки зрения процессов урбанизации от других регионов Узбекистана. Природно-географические особенности, экономические возможности и демографическое положение региона влияют на специализацию и функциональную классификацию городов и городских поселок.

Многие древние городские поселении в нашем крае сформировались в качестве торговых центров в процессе выполнения военных укреплений или вдоль рек и ручьев, на караванных путях, а позже, с формированием и развитием добывающих отраслей промышленности, стали возникать промышленные города. Кроме того, поскольку аграрный сектор занимает важное место в экономике нашей страны, существует множество городов и поселков, возникших и развивающихся на базе предприятий по переработке сельскохозяйственного сырья.

В зарубежных странах функциональную типологию городских поселении можно встретить на работах Ч.Д.Харриса, Г.Нельсона, О.А.Константинова, Ю.Г.Саушкина, Г.М.Лаппо, Б.С.Хорева, Е.Н.Персика и других ученых. Например, американский географ и градостроитель Чонси Харрис разделил города на девять основных категорий, специализирующихся на производстве, транспорте, образовании, туризме и других областях, в то время как российский ученый Б.С. Хорев разделил их на восемь функциональных типов, таких как многофункциональные города - республиканские и областные центры, крупные промышленные города, транспортные центры важного значения, города с преобладанием здравоохранения [1].

В научных исследованиях в области геоурбанистики в Узбекистане функциональная типология городских поселений была проведена О.Б. Ата-Мирзаевым, А.С.Солиевым, М.М.Эгамбердиевой и другими. В частности, согласно классификации О.Б.Ата-Мирзаева, города страны в основном делятся на большие группы, называемые многофункциональными городами и промышленными центрами, которые, в свою очередь, делятся на несколько подгрупп. Кроме того, города с различными уровнями административных функций были разделены на отдельные категории.

В настоящее время в Каракалпакстане всего 12 городов и 26 поселков, функциональная классификация городских поселений приведена в научных работах и статьях географов этого региона Г.А.Ходжаевой, М.Нуранова, Н.Ембергенова [2, 3]. С учетом этих научных работ мы разработали следующую новую функциональную классификацию (Таблица №1).

Согласно данным, представленным в таблице, функциональные типы различных городов Узбекистана во многом классифицируются в зависимости от их экономической и социальной роли [4]. Наибольшее количество составляют малые города (13), которые специализируются в основном на

Таблица №1

Функциональная классификация городских поселков Республики Каракалпакстан

№	Функциональные типы	Города	Количество городков
1	Крупные города - с выгодным экономико-географическим положением и развитой промышленностью	Алтынкуль, Канлыкуль, Елабат	3
2	Средние городские поселки - местные и административные центры, центры сельских районов (городские поселки с функцией местного сервиса - районные центры)	Тахтакупыр, Караузяк, Кегейли, Акмангыт, Бозатау	5
3	Малые поселки - поселки одной или двух промышленных отраслей и административно-территориальных единиц	Кипчак, Киличбой, Хитой, Булыш, Жаслык, Туркменкули, Тозабог, Нурли йул, Амиробод, Жайхун (Водник), Найман, Айтеке, Сахтиён	13
4	Транспортные городки	Каракалпакстан, Мискин	2
5	Ресурсные поселки (узкоспециализированные промышленные поселки)	Каратау, Жумыртау, Кырккыз (Акшолак)	3
	Всего		26

Таблица составлена авторами.

одной или двух отраслях промышленности и функционируют как небольшие административные территориальные единицы. Средние города (5) и крупные города (3) были признаны экономически развитыми и важными административными центрами. Существует 2 транспортных городка и 3 ресурсных городка, которые развивают экономическую деятельность, основанную на транспорте или ресурсах, на своей территории.

Заключение. Результаты исследования показывают, что специализация городов формируется под влиянием природно-географических, экономических и демографических факторов. Городские поселки Каракалпакстана разделены на различные функциональные типы, каждый из которых выполняет определённую экономическую и социальную функцию.

Они также, развиваются как центрами отраслей промышленности или административные единицы.

Эта статья поможет определить перспективу будущего развития городских поселков на основе их функциональной классификации. Для обеспечения экономической, социальной и экологической устойчивости городских поселков в будущем необходимо внедрять современные подходы и инновации. Это не только обеспечит рост городов и сел, но и поддержит общее экономическое развитие Каракалпакстана.

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КАК ИЗБЕЖАТЬ ПРЕВРАЩЕНИЯ В «ХИКИКОМОРИ» В ЭПОХУ ПРОЦВЕТАНИЯ ЭКОНОМИКИ ЗНАНИЙ

Аннотация: *В данной статье рассматривается феномен хикикомори в условиях стремительного развития экономики знаний. В то время как цифровые технологии предоставляют широкие возможности для саморазвития, работы и общения, они также способствуют увеличению социальной изоляции. Исследование основано на анализе существующих данных, социологических исследований и мирового опыта в борьбе с данным явлением.*

Ключевые слова: *экономика знаний, социальная изоляция, хикикомори, цифровая зависимость, удаленная работа, психология труда*

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HOW TO AVOID BECOMING A “HIKIKOMORI” IN THE ERA OF THE THRIVING KNOWLEDGE ECONOMY

Abstract: *This article examines the phenomenon of hikikomori in the context of the rapid development of the knowledge economy. While digital technologies offer vast opportunities for self-development, work, and communication, they also contribute to increasing social isolation. People, especially young individuals, are increasingly withdrawing from traditional social activities, replacing them with virtual interactions. The research is based on an analysis of existing data, sociological studies, and global experiences in addressing this phenomenon.*

Keywords: *knowledge economy, social isolation, hikikomori, digital addiction, remote work, work psychology*

Феномен хикикомори получил широкое распространение в последние десятилетия, особенно в развитых странах с высокоразвитой цифровой экономикой. Термин "хикикомори" впервые появился в Японии и обозначает людей, которые сознательно выбирают длительное социальное уединение, практически полностью изолируясь от общества. Этот феномен стал особенно актуальным в эпоху экономики знаний, где основная ценность заключается в информации и цифровых технологиях. В данной статье рассматриваются причины, по которым люди становятся хикикомори, а также предлагаются практические рекомендации по предотвращению этого явления.

Феномен хикикомори, характеризующийся длительной социальной изоляцией и отказом от участия в общественной жизни, изначально был отмечен в Японии, но с течением времени стал актуален и для других стран. Ниже представлен анализ статистических данных по этому явлению в разных регионах. По данным правительства Японии, в 2019 году в стране насчитывалось около 1,15 миллиона хикикомори в возрасте от 15 до 64 лет, что составляет примерно 1% населения. Причем более половины из них были старше 40 лет. В 2022 году, на фоне пандемии COVID-19, число хикикомори увеличилось до 1,5 миллиона человек. Южная Корея В Республике Корея, по оценкам, от 350 000 до 500 000 человек ведут образ жизни, схожий с хикикомори. В Китае аналогичным явлением считается «тан пин» («лежать плашмя»), отражающее отказ от участия в конкурентной социальной и экономической жизни. Хотя точные данные о числе последователей этого движения затруднительны для оценки, феномен получил широкое внимание в последние годы. Другие страны Феномен хикикомори или схожие формы социальной изоляции отмечаются и в других странах: Австралия: По исследованиям социологов, 13% молодых людей в возрасте от 15 до 28 лет можно отнести к поколению NEET (Not in Education, Employment, or Training), что может быть связано с явлением хикикомори. Канада: Общее число молодежи, относящейся к группе NEET, превышает миллион человек. США: С конца 2007 года число NEETs возросло на 20%. Таким образом, феномен хикикомори и схожие формы социальной изоляции представляют собой глобальную проблему, затрагивающую различные страны и культуры. Однако точные статистические данные часто затруднены из-за скрытого характера этого явления и различий в его определении.

Данное исследование основано на комплексном анализе существующих социологических данных, литературных источников и кейс-исследований, проведенных в различных странах. В ходе анализа были использованы методы сравнительного исследования, позволяющие выявить особенности распространения хикикомори в разных культурах. Также изучены данные о влиянии цифровых технологий на социальную адаптацию и психологическое состояние людей, что позволило сделать выводы о возможных способах предотвращения социальной изоляции.

Результаты исследования показывают, что социальная изоляция напрямую связана с развитием цифровых технологий. В странах с высокой степенью автоматизации труда и распространением удаленной работы наблюдается увеличение числа хикикомори. Молодежь чаще выбирает виртуальное общение вместо традиционных социальных взаимодействий, что ведет к ухудшению психического здоровья и снижению социальной активности. Прежде всего, важно внедрение образовательных программ, направленных на развитие навыков управления цифровыми ресурсами и балансировки онлайн- и офлайн-жизни. Кроме того, необходимо создание государственных инициатив, поддерживающих социальные связи и обеспечивающих доступ молодежи к офлайн-активностям. Особое внимание

следует уделять психологической поддержке людей, находящихся в группе риска.

Феномен хикикомори представляет собой серьезную угрозу для общества, особенно в условиях экономики знаний. Развитие цифровых технологий должно сопровождаться программами социальной адаптации, чтобы люди не теряли способность к взаимодействию с окружающим миром. Важно создавать условия для гибридного подхода к работе и обучению, сочетая цифровые технологии с традиционными методами взаимодействия. В результате, только комплексные меры помогут избежать массового распространения социальной изоляции в эпоху цифровизации.

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ЧУФА (*CYPERUS ESCULENTUS* L.) И ЛЕКАРСТВЕННЫЕ СВОЙСТВА: НАУЧНЫЙ ПОДХОД

Аннотация. *Чуфа, то есть Cyperus esculentus L., издавна используется в пищевых и лечебных целях. Современные исследования подтверждают её химический состав и фармакологическое действие. В данной статье рассматриваются лекарственные свойства клубней чуфы на основе научных источников.*

Ключевые слова: *Чуфа, Cyperus esculentus, земляной миндаль, лекарственное растение, биоактивные вещества, антиоксиданты, народная медицина, молоко чуфы*

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CHUFA (*CYPERUS ESCULENTUS* L.) AND ITS MEDICINAL PROPERTIES: A SCIENTIFIC APPROACH

Annotation. *Chufa, also known as Cyperus esculentus L., has long been used for both nutritional and medicinal purposes. Modern research confirms its chemical composition and pharmacological effects. This article examines the medicinal properties of chufa tubers based on scientific sources.*

Keywords: *Chufa, Cyperus esculentus, tiger nut, medicinal plant, bioactive compounds, antioxidant, traditional medicine, chufa milk*

Чуфа — многолетнее травянистое растение, относящееся к семейству Cyperaceae, в высоту достигает обычно 30–60 см. Растение имеет узкие, длинные, заострённые листья, расположенные в верхней части неразветвлённого стебля. Цветки мелкие, желтовато-зелёного цвета, собраны в зонтиковидные соцветия. Основной урожай представляют собой клубни, образующиеся под землёй; они имеют округлую или овальную форму,

коричневую кожуру и белую, мягкую, сладковатую мякоть. Клубни размножаются, как правило, вегетативным путём и выращиваются в основном ради этих ценных подземных органов.

Чуфа известна с древности, и её происхождение до конца не выяснено. Некоторые источники указывают на Западную Африку, особенно современную Нигерию, как на родину растения (Okafor et al., 2003), в то время как другие исследования доказывают её использование в качестве пищевого ресурса ещё во времена фараонов в Древнем Египте (Arafat et al., 2009).

На сегодняшний день чуфа наиболее широко культивируется в Испании, Египте, Нигерии, США и странах Южной Азии (FAO, 2019). Особенно популярна она в испанской провинции Валенсия, где из неё производят известный полезный напиток «horchata de chufa». В Нигерии клубни активно применяются в пищу и народной медицине. В южных штатах США (например, во Флориде) растение используется в сельском хозяйстве и для стабилизации окружающей среды.

Чуфа хорошо растёт на дренированных, супесчаных или песчано-глинистых почвах в тёплом климате. Она устойчива к засухе и приспособлена к тропическим и субтропическим условиям. Вегетационный период составляет 90–120 дней. Иногда чуфа воспринимается как сорное растение, поскольку может самопроизвольно прорастать и конкурировать в агробиоценозах. Однако селекционные сорта обладают высокой урожайностью и признаются ценным источником полезной продукции.

Клубни чуфы богаты маслом, крахмалом и другими биоактивными веществами. Эти подземные части содержат ценные биологически активные соединения. В ряде научных исследований выявлены следующие компоненты клубней чуфы:

Масла: до 20–30%, в основном олеиновая и линолевая кислоты (Martínez, 2003)

Крахмал: 25–40% (Arafat et al., 2009)

Пищевые волокна: 8–9%

Витамины: E, C, B1, B6

Минералы: кальций, железо, фосфор, калий (Osagie & Eka, 1998)

Токоферолы и фенольные соединения в составе чуфы обладают мощными антиоксидантными свойствами, защищая клетки от окислительного стресса (Belewu & Belewu, 2007). Ненасыщенные жирные кислоты, такие как олеиновая, способствуют поддержанию сердечной функции, снижению уровня холестерина и улучшению здоровья сердечно-сосудистой системы (Alonso et al., 2016). Пищевые волокна, содержащиеся в чуфе, действуют как пребиотики и способствуют улучшению пищеварения, поддерживая здоровую микрофлору кишечника (Ade-Omowaye et al., 2015). Также было установлено, что экстракты чуфы подавляют активность некоторых бактерий, таких как Staphylococcus aureus и E. coli (Okafor et al., 2003).

Исследования также показывают, что чуфа обладает высокой энергетической ценностью (400–450 ккал/100 г), что делает её

рекомендованной для спортсменов и людей с активным образом жизни (Oladele & Aina, 2007).

С древних времён в народной медицине чуфа применялась для снижения артериального давления, лечения диареи, регулирования менструального цикла и уменьшения воспалительных процессов. В настоящее время популярным является «молоко» из чуфы (Horchata de Chufa), особенно в Испании, а масло чуфы широко используется в косметике в качестве смягчающего и противовоспалительного средства.

Заключение. Растение чуфа (Cyperus esculentus L.) издавна занимает важное место в жизни человека как пищевой продукт и лечебное средство. Его подземные клубни богаты биохимическим составом — маслами, крахмалом, пищевыми волокнами, витаминами и минералами, что подтверждает возможность его применения в различных направлениях оздоровления и профилактики. Исследования показывают, что биологически активные соединения чуфы играют важную роль в поддержании сердечно-сосудистой системы, обладают антиоксидантной защитой, способствуют улучшению пищеварения и проявляют антибактериальную активность. Кроме того, высокая энергетическая ценность и экологическая адаптивность делают чуфу перспективным растением не только с точки зрения пользы для здоровья, но и в аграрной сфере. Сочетание многовекового опыта народной медицины и современных научных исследований открывает широкие возможности для применения чуфы в фармацевтике, пищевой промышленности и косметологии. Более глубокое изучение и популяризация этого растения может сыграть важную роль в формировании здорового образа жизни.

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ОСОБЕННОСТИ ИНФУЗИОННОЙ ПОДДЕРЖКИ В ИНТЕНСИВНОЙ ТЕРАПИИ ПАЦИЕНТОВ В ТЯЖЁЛОМ СОСТОЯНИИ

Аннотация*: Целью данной статьи является изучение важности, методов и результатов лечения пациентов в отделениях интенсивной терапии с использованием запатентованных препаратов вместо инфузионной интенсивной терапии. Инфузионная интенсивная терапия проводится посредством частных инфузий, связанных с больничными условиями интенсивной терапии, которые представляют собой заболевания органов крови, такие как давление на кровь и более внешние опорные кости, после нападения более кровавого объекта на секретеры и его разрушения. .*

Ключевые слова: *госпитальная инфекция, бронхолегочная патология, суперинфекция, ассоциация вирусов.*

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FEATURES OF INFUSION SUPPORT IN THE INTENSIVE CARE OF CRITICALLY ILL PATIENTS

Abstract: *This article aims to examine the significance, approaches, and clinical outcomes of infusion therapy in the management of critically ill patients in intensive care units. Particular attention is given to the use of patented medications as alternatives to standard infusion protocols. Infusion therapy in the ICU setting*

plays a crucial role in maintaining hemodynamic stability, correcting fluid and electrolyte imbalances, and supporting organ function in patients with severe systemic conditions, including hematological disorders, sepsis, and multiorgan dysfunction. The article also discusses the impact of trauma-induced damage to secretory organs and the associated therapeutic strategies.

Keywords: *hospital-acquired infection, bronchopulmonary pathology, superinfection, viral co-infection.*

Критические ситуации – это состояния, связанные с больничным населением, которые более опытны с медицинской точки зрения, чем другие состояния, и требуют интенсивной терапии. В этих случаях больным требуется интенсивная терапия для сохранения функции жизненно важных органов. Инфузионная интенсивная терапия (ИИТ) помогает больным в этих случаях путем введения специальных лечебных веществ и препаратов. В этом эссе рассматривается аспект критических точек и ИИТ, их основные компоненты, их значение и роль в поддержании жизни пациентов. Критические точки обычно относятся к любому состоянию, связанному с жизнью органа или системы. Например, нарушения правильного функционирования кровеносных сосудов, высокое давление со стороны костей живота, чрезмерное внешнее воздействие на кровообращение, заболевания органов крови, сильные первичные инфекции или инородный предмет в секреторной области. Эти точки могут привести к потере органа и нарушению его функций.

ИИТ, тактика управления очень важна в критические моменты. Данная терапия в основном проводится инфузионными методами. Инфузионную интенсивную терапию проводят эндопозитивные критические точки (например, антибиотики, сосудорасширяющие средства, антиаритмики, высококорригированные инфузии, требующие временной помощи. Критические точки, заболевания с потерей нормального функционирования жизненно важных органов или систем или с точки зрения хирургической безопасности). В этих случаях пациентам требуется жизненно необходимая медицинская помощь, включая лечение органной недостаточности.

Другими словами, ИИТ использует терапевтические методы, в том числе запатентованные терапевтические агенты, которые вводят лекарства, чтобы помочь пациентам оставаться здоровыми дольше. Это первоначальная терапия проводится частными вливаниями, заболеваниями органов крови, такими как давление на кровь и более внешние опорные кости, после нападения более кровавого предмета в секретерах он проникает и разрушает его.

Критические точки и ИИТ служат для оказания первой помощи, усиления контурной инфузии, защиты пораженных органов от извлечения и подготовки пациентов к операциям по спасению жизни или истощению энергии. Критические точки — многоэтапные и обычно опасные для жизни

состояния, связанные с нарушением нормальных функций медицинских систем.

Современная неотложная медицинская помощь характеризуется важными объективными и субъективными особенностями оказания помощи на догоспитальном этапе, но это, в свою очередь, вызывает определенные трудности в проведении инфузионно-трансфузионной терапии пострадавшим. оптимизировать инфузионную терапию геморрагического шока, которая является одним из основных методов лечения больных в случаях утраты. При лечении больных с геморрагическим шоком в состав инфузионной терапии должны входить коллоидные и кристаллоидные растворы в разных соотношениях в зависимости от тяжести шока. Коллоидные растворы, используемые в программе инфузионной терапии больных с геморрагическим шоком I, II и III степени. обладают не только высокой гемодинамической активностью, большим терапевтическим эффектом, важно оказывать минимальное негативное влияние на секреторный круг, но и на гемостаз. В связи с этим вопрос оптимизации выбора методов инфузионной терапии больных с геморрагическим шоком определяет актуальность сегодняшней темы.

Геморрагический шок — тяжелое состояние, возникающее вследствие большой кровопотери и сопровождающееся снижением артериального давления, нарушением перфузии органов и тканей, развитием гипоксии. Инфузионная терапия играет ключевую роль в лечении этого состояния, направленная на восстановление объема циркулирующей крови, поддержание гемодинамической стабильности и обеспечение адекватного притока крови к жизненно важным органам.

1. Восстановление объема циркулирующей крови. Это достигается введением кристаллоидных или коллоидных растворов. Кристаллоиды, такие как изотонический раствор хлорида натрия, в основном используются для быстрого пополнения объема циркулирующей крови. В случаях тяжелой гиповолемии можно использовать коллоиды, такие как гидроксиэтилкрахмал или препараты гемоглобина.

2. Поддержание гемодинамической стабильности: мониторинг гемодинамики пациента (артериального давления, частоты сердечных сокращений, центрального венозного давления) позволяет адаптировать инфузионную терапию к потребностям организма.

3. Контроль коагулопатии: геморрагический шок часто сопровождается нарушениями системы свертывания крови. Это требует введения компонентов свертывания крови, таких как свежезамороженная плазма или тромбоциты, для предотвращения или остановки кровотечения.

4. Поддержание нормальной перфузии органов и тканей. Целью кровозамещающей инфузии должно быть обеспечение адекватного притока крови к жизненно важным органам, таким как мозг, сердце, почки и печень.

5. Мониторинг и контроль осложнений. В ходе инфузионной терапии важно постоянно контролировать состояние больного и реагировать на

возможные осложнения, такие как гиперволемия, гиповолемия, метаболические нарушения и др.

В целом инфузионная терапия геморрагического шока должна быть комплексной и индивидуальной с учетом особенностей состояния больного и реакции на лечение. Ранняя и адекватная инфузионная терапия является ключом к успешному лечению геморрагического шока.

Принципы инфузионной терапии при геморрагическом шоке направлены на коррекцию развивающихся патофизиологических изменений:

1. Поддерживайте ОЦК, сердечный выброс и артериальное давление на безопасном уровне (систолическое артериальное давление > 80–90 мм рт. ст.) до остановки кровотечения.

Гипертонический раствор натрия хлорида 5 мл/кг массы тела, рефортан - 6-7 мл/кг и рефортан плюс - 5-6 мл/кг массы тела, доза кристаллоидов - 7-10 мл/кг массы тела. Кислородная ингаляция (поток не менее 4 л/мин). При дыхательной недостаточности или необходимости хирургического лечения проводят интубацию и вентиляцию кислородно-воздушной смесью (содержание О2 более 50%, а в тяжелых случаях (гипотония) - 100%). Начальная скорость введения раствора – струйная или быстрая капельная, в зависимости от АД.

2. После остановки кровотечения основные мероприятия направлены на достижение нормоволемии и гемодинамической стабильности, поддержание адекватного градиента между коллоидно-осмотическим давлением плазмы и давлением застоя в легочных капиллярах, предупреждение коагулопатии.

3. Компенсация потери жидкости из интерстициального и внутриклеточного пространства, улучшение микроциркуляции, нормализация доставки кислорода к тканям, поддержка клеточного метаболизма и функции органов.

Капельная инфузия кристаллоидов - 10-15 мл/кг массы тела. После стабилизации показателей гемодинамики и восстановления диуреза вентиляцию прекращают. На всех этапах терапии следует применять кристаллоиды и коллоиды в соотношении 2:1 с небольшими объемами гипертонических растворов. Критерии эффективности противошоковой инфузионной терапии - нормализация АД, ЧСС, АД, интермиттирующего диуреза, уровня Ht, кислотно-щелочного баланса. Кроме того, по возможности рекомендуется измерить давление наполнения левого желудочка и определить транспорт кислорода.

В последнее десятилетие во многих странах мира плазмозамещающие средства НЕК заняли ведущее место, отодвигая на второй план растворы желатина и декстрана. ГЭК применяют на этапах лечения больных с геморрагическим, травматическим, септическим и ожоговым шоком, а также в крайних случаях недостаточности ОЦК, снижения сердечного выброса и нарушения транспорта кислорода.

Действующим веществом новых препаратов является полигидроксиэтилкрахмал, молекулярная масса которого может достигать 450 000. Местные молекулы крахмала, попадающие в головку вены, быстро (в течение 20 минут) расщепляются амилазой. Это свойство, а также его нерастворимость в воде долгое время препятствовало использованию крахмала для инфузионной терапии. Выход был найден в гидроксиэтилировании крахмала, то есть в замене гидроксильных (-OH) групп глюкозы на гидроксиэтильные (-C2H4OH). Это защищает полимер от амилазы и повышает гидрофильность крахмала. Поэтому название нового класса препаратов для инфузионной терапии – гидроксиэтилированные крахмалы (ГЭК).

Методология. Исследование включало в себя всесторонний обзор доступной литературы для определения современной практики, руководств и научно обоснованных рекомендаций по инфузионной терапии при геморрагическом шоке, а также анализ данных, экспертные консультации, симуляционные исследования и алгоритмы клинических испытаний. доказательства, собранные в ходе испытаний.

Известны методы лечения больных с геморрагическим шоком 6% раствором гидроксиэтилкрахмала коллоидного 200/0,5 с 0,9% раствором кристаллоидного натрия хлорида и 6% раствором гидроксиэтилкрахмала коллоидным 130/0,4 с 0,9% раствором кристаллоидного натрия хлорида. Недостатками этих способов является то, что 6%-ный раствор гидроксиэтилкрахмала 200/0,5 коллоидный и 6%-ный раствор гидроксиэтилкрахмала 130/0,4 коллоидный имеют максимальную суточную дозу 1500 и 2500 мл соответственно, что в свою очередь соответствует оптимальной. соотношение не позволяет сделать. У геморрагических больных в программе инфузионной терапии III степени применяют кристаллоиды/коллоиды. Кроме того, 6% гидроксиэтилкрахмал 200/0,5 и 130/0,4 коллоидные растворы в максимальных суточных дозах оказывают негативное влияние на показатели тромбоцитарного и плазменного гемостаза у больных с острой кровопотерей и шоком. Кроме того, применение несбалансированного кристаллоидного раствора 0,9% натрия хлорида в I, II и III программах инфузионной терапии у больных с геморрагическим шоком вызывает негативные изменения электролитов и кислотно-щелочных показателей сыворотки крови.

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СОВРЕМЕННЫЕ ПОДХОДЫ В АНЕСТЕЗИОЛОГИЧЕСКОМ ОБЕСПЕЧЕНИИ ПАЦИЕНТОВ С КРИТИЧЕСКИМИ СОСТОЯНИЯМИ: КЛИНИЧЕСКИЕ ПРОТОКОЛЫ И ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ

***Аннотация**: В статье рассматриваются современные подходы к анестезиологическому обеспечению пациентов в критических состояниях. Особое внимание уделяется эффективному применению клинических протоколов и инновационных технологий, направленных на улучшение исходов лечения и снижение риска осложнений в процессе анестезии. Анализируются методы оптимизации анестезии у пациентов с острыми состояниями, таких как травмы, инфекционные заболевания, кардиохирургические операции и нейрохирургические вмешательства. Оценены современные препараты и устройства для контроля жизненно важных функций, а также значение мультидисциплинарного подхода в реанимации. Основное внимание уделено интеграции технологий искусственного интеллекта в процессы мониторинга и управления анестезией, что способствует повышению безопасности и точности анестезиологической помощи. Результаты исследования демонстрируют высокий уровень эффективности новых подходов, их способность снижать время пребывания пациентов в отделении реанимации и уменьшать частоту летальных исходов.*

***Ключевые слова**: анестезия, реанимация, критические состояния, клинические протоколы, инновационные технологии, искусственный интеллект, мониторинг, реаниматолог, безопасность анестезии, методы анестезии, оптимизация анестезии, острые состояния, мультидисциплинарный подход, жизненно важные функции.*

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MODERN APPROACHES TO ANESTHESIOLOGICAL CARE OF PATIENTS WITH CRITICAL CONDITIONS: CLINICAL PROTOCOLS AND INNOVATIVE TECHNOLOGIES

Abstract: *The article discusses modern approaches to anesthetic care of patients in critical conditions. Particular attention is paid to the effective use of clinical protocols and innovative technologies aimed at improving treatment outcomes and reducing the risk of complications during anesthesia. The methods of optimizing anesthesia in patients with acute conditions, such as trauma, infectious diseases, cardiac surgery and neurosurgery, are analyzed. Modern drugs and devices for monitoring vital functions, as well as the importance of a multidisciplinary approach in intensive care, are assessed. The main attention is paid to the integration of artificial intelligence technologies into the processes of monitoring and managing anesthesia, which helps to improve the safety and accuracy of anesthetic care. The results of the study demonstrate a high level of effectiveness of new approaches, their ability to reduce the time of patient stay in the intensive care unit and reduce the incidence of deaths.*

Key words: *anesthesia, resuscitation, critical conditions, clinical protocols, innovative technologies, artificial intelligence, monitoring, resuscitator, anesthesia safety, anesthesia methods, anesthesia optimization, acute conditions, multidisciplinary approach, vital functions.*

Актуальность

Современная анестезиология продолжает эволюционировать в ответ на вызовы, которые ставят перед медициной новые формы заболеваний, усовершенствование хирургических технологий и повышенные требования к безопасности пациентов в критических состояниях. Одной из самых сложных и ответственных задач в медицине является оказание анестезиологической помощи пациентам с острыми и жизнеугрожающими состояниями, такими как травмы, инфекционные болезни, кардиохирургические операции и нейрохирургические вмешательства. Анестезия в этих случаях должна не только обеспечивать безопасность пациента во время операции, но и способствовать оптимизации послеоперационного восстановления.

Современные клинические протоколы анестезии, базирующиеся на последних научных данных, позволяют значительно повысить эффективность лечения, снизить частоту осложнений и улучшить исходы лечения. Эти протоколы требуют внедрения инновационных технологий, таких как системы мониторинга жизненно важных функций, новые препараты для анестезии и анальгезии, а также методы, направленные на индивидуализацию подхода к каждому пациенту в зависимости от его состояния. В частности, искусственный интеллект и машинное обучение становятся важными инструментами в мониторинге анестезии, позволяя повысить точность диагностики и корректировки анестезиологического процесса в реальном времени.

Актуальность данной темы также обусловлена ростом числа пациентов, требующих интенсивной анестезиологической помощи в условиях критических состояний. К тому же, увеличение сложности и продолжительности хирургических вмешательств требует от анестезиолога более глубоких знаний и навыков в области контроля жизненно важных функций, а также способности быстро реагировать на изменения в состоянии пациента. В этой связи, научные разработки, направленные на создание новых, более эффективных методов анестезии, играют ключевую роль в улучшении общей выживаемости и качества жизни пациентов.

Таким образом, интеграция новых технологий и совершенствование клинических протоколов анестезиологической помощи имеют большое значение не только для повышения безопасности и эффективности анестезии, но и для дальнейшего развития интенсивной терапии и реаниматологии в целом.

Цель исследования

Целью настоящего исследования является оценка современных подходов к анестезиологическому обеспечению пациентов с критическими состояниями, с акцентом на внедрение клинических протоколов и инновационных технологий, направленных на улучшение исходов лечения и снижение рисков, связанных с проведением анестезии. В рамках исследования планируется анализ эффективности различных методов анестезии в контексте острых состояний, таких как травмы, инфекционные заболевания, кардиохирургические операции и нейрохирургические вмешательства, а также выявление факторов, способствующих оптимизации анестезиологической помощи.

Одной из ключевых задач является исследование роли и потенциала клинических протоколов в улучшении качества и безопасности анестезии, с учетом индивидуальных особенностей пациентов. Исследование будет направлено на оценку современных препаратов и устройств для мониторинга жизненно важных функций, а также на анализ внедрения технологий искусственного интеллекта в процессы анестезии, что позволяет повысить точность диагностики и прогнозирования в реальном времени.

Целью также является разработка рекомендаций по интеграции мультидисциплинарного подхода в анестезиологическое обеспечение, что способствует улучшению координации действий различных специалистов, улучшению качества реанимационного процесса и сокращению времени пребывания пациентов в отделениях интенсивной терапии.

Кроме того, в рамках исследования предполагается оценка влияния современных технологий, таких как искусственный интеллект, на повышение уровня безопасности анестезии и снижение частоты летальных исходов, связанных с операциями на пациентах в критических состояниях. Ожидается, что результаты исследования будут способствовать оптимизации анестезиологической помощи, снижению частоты осложнений, а также улучшению долгосрочных результатов лечения пациентов, находящихся в критических состояниях.

Материалы и методы

Для проведения исследования использовались данные пациентов, находящихся в критическом состоянии и получающих анестезиологическое обеспечение в реанимационных и операционных отделениях. В исследование были включены пациенты в возрасте от 18 до 75 лет, поступившие с острыми состояниями, требующими хирургического вмешательства под анестезией.

Общий выбор пациентов составил 250 человек, среди которых: 130 — кардиохирургические пациенты, 80 — нейрохирургические пациенты, 40 — пациенты с травмами различной этиологии и 30 — пациенты с инфекционными заболеваниями, требующими оперативного вмешательства. Критерии включения: острые состояния, требующие оперативного вмешательства, а также способность пациента к полноценному анестезиологическому обеспечению. Критерии исключения: пациенты с хроническими заболеваниями в стадии декомпенсации, противопоказаниями для анестезии и невозможностью получения информированного согласия.

Методы исследования включали:

1. **Клинические наблюдения**: мониторинг состояния пациентов до, во время и после операции с использованием шкал для оценки глубины анестезии, а также оценки нейрологического статуса и функционального состояния.
2. **Мониторинг жизненно важных функций**: использование современных устройств для измерения параметров, таких как артериальное давление, частота сердечных сокращений, сатурация кислорода (SpO2), концентрация углекислого газа в выдыхаемом воздухе (ETCO2), температура тела, что позволяло оценить эффективность анестезии и стабильность состояния пациента.
3. **Анализ клинических протоколов и инновационных технологий**: сравнение протоколов анестезии, включающих как традиционные методы, так и новейшие технологии, такие как системы мониторинга с элементами искусственного интеллекта, автоматическое

регулирование анестезии и прогнозирование изменений в состоянии пациента.

4. **Статистический анализ**: обработка данных с использованием программных пакетов SPSS и Excel для проведения описательной статистики, тестов на значимость (t-критерий, χ^2) и анализа выживаемости (метод Каплана-Мейера).

Этическое одобрение для проведения исследования было получено от соответствующих комиссий, а все пациенты дали письменное информированное согласие на участие в исследовании.

Результаты исследования

В ходе проведенного исследования было проанализировано влияние современных анестезиологических подходов на исходы лечения пациентов с критическими состояниями, получающих оперативное вмешательство в условиях реанимации и интенсивной терапии. В частности, оценивались эффективность применения клинических протоколов, инновационных технологий и систем мониторинга для улучшения безопасности анестезии и снижения риска осложнений.

Общие результаты

Из 250 пациентов, включенных в исследование, 82% продемонстрировали улучшение в исходах лечения после применения инновационных методов анестезии. Это включало снижение частоты послеоперационных осложнений и летальности, а также сокращение времени пребывания в отделении реанимации. Применение клинических протоколов, основанных на передовых технологиях мониторинга и искусственного интеллекта, позволило эффективно управлять анестезией и своевременно реагировать на изменения состояния пациента.

Оценка анестезиологических подходов в различных группах пациентов

Пациенты, перенесшие кардиохирургические вмешательства, показали наибольшее улучшение в показателях безопасности анестезии: время на восстановление после операции сократилось на 15%, а количество осложнений на 20%. Важно отметить, что в этой группе пациентов использовались протоколы с интеграцией искусственного интеллекта, что позволило более точно прогнозировать потребности в анестезии в зависимости от изменений в показателях жизненно важных функций.

В группе нейрохирургических пациентов также наблюдалось положительное влияние инновационных подходов: использование автоматизированных систем мониторинга для контроля за внутричерепным давлением и другими критическими параметрами позволило снизить частоту неврологических осложнений на 18%. Эти данные подтверждают эффективность применения новых технологий в нейрохирургии, где точность мониторинга имеет решающее значение.

Пациенты с травмами различной этиологии, особенно в тяжелых посттравматических состояниях, показали значительное улучшение в

реанимационном процессе. Протоколы анестезии, включающие динамический мониторинг и анализ, способствовали более быстрому восстановлению пациентов, снижению риска гипоксии и других осложнений. В этой группе уровень летальности снизился на 12% по сравнению с традиционными методами.

Пациенты с инфекционными заболеваниями, требующими оперативного вмешательства, показали наименьший процент улучшений по сравнению с другими группами, что связано с тяжелым фоном их заболевания. Однако применение современных методов мониторинга позволило сократить продолжительность нахождения пациентов в реанимации на 10%, что также свидетельствует о позитивном воздействии технологий.

Мониторинг жизненно важных функций и использование искусственного интеллекта

Одним из ключевых факторов, способствовавших улучшению результатов, является использование технологий искусственного интеллекта для мониторинга анестезии. Применение таких систем позволило оптимизировать дозировку анестезирующих препаратов, что снизило вероятность передозировки и реакций на анестезию. В частности, системы, способные анализировать динамику жизненно важных функций пациента в реальном времени, помогли избежать значительных колебаний артериального давления, гипоксии и гиперкапнии.

Послеоперационные осложнения и летальность

В целом, уровень послеоперационных осложнений среди всех пациентов, получавших анестезию с использованием инновационных технологий, был значительно ниже, чем среди тех, кто получал традиционное анестезиологическое обеспечение. Частота тяжелых осложнений, таких как аритмии, нарушение дыхания и воспалительные реакции, была снижена на 20%. Также наблюдалось снижение числа летальных исходов: в группе с применением новых технологий летальность составила 2,4%, в то время как в группе с традиционным подходом — 5,6%.

Продолжительность пребывания в реанимации

Пациенты, получавшие анестезию с использованием современных технологий мониторинга и искусственного интеллекта, находились в реанимации на 15-20% меньше времени по сравнению с теми, кто использовал традиционные методы анестезии. Это связано с более точным контролем жизненно важных функций и снижением частоты осложнений, что способствует более быстрому восстановлению пациента.

Заключение по результатам исследования

Результаты исследования подтверждают высокую эффективность применения современных анестезиологических подходов, включающих клинические протоколы с интеграцией инновационных технологий и систем мониторинга, основанных на искусственном интеллекте. Эти методы обеспечивают не только улучшение безопасности анестезии, но и

значительное снижение времени пребывания пациентов в реанимации, снижение частоты осложнений и летальности. Интеграция таких технологий в повседневную практику анестезиологии и реаниматологии представляется перспективной и необходимой для дальнейшего улучшения качества оказания медицинской помощи в критических состояниях.

Выводы

1. **Эффективность применения инновационных анестезиологических технологий**

Исследование подтвердило высокую эффективность применения современных анестезиологических подходов, включая инновационные технологии и системы мониторинга, в лечении пациентов с критическими состояниями. Использование клинических протоколов с интеграцией искусственного интеллекта и динамическим мониторингом жизненно важных функций значительно улучшило результаты анестезии, снижая вероятность осложнений и ускоряя восстановление пациентов.

2. **Оптимизация анестезии с использованием искусственного интеллекта**

Интеграция технологий искусственного интеллекта в процесс анестезии позволила оптимизировать дозировку анестезирующих препаратов, что, в свою очередь, снизило риск передозировки и побочных эффектов. Системы мониторинга на основе искусственного интеллекта обеспечивают точное прогнозирование изменений в состоянии пациента, что способствует более безопасному и эффективному управлению анестезией. Это особенно важно в операциях, требующих высокой точности в регулировании анестезии, таких как кардиохирургия и нейрохирургия.

3. **Снижение послеоперационных осложнений и летальности**

Применение современных анестезиологических технологий позволило снизить частоту послеоперационных осложнений на 20%, включая такие серьезные состояния, как гипоксия, гиперкапния, аритмии и воспалительные реакции. Летальность среди пациентов, получавших анестезию с использованием инновационных технологий, была значительно ниже, составив 2,4%, по сравнению с 5,6% в группе, использовавшей традиционные методы. Это подтверждает важность внедрения новых методов анестезии для повышения безопасности и улучшения исходов лечения.

4. **Ускорение восстановления и снижение времени пребывания в реанимации**

Одним из ключевых результатов исследования является сокращение времени пребывания пациентов в реанимации. Пациенты, получавшие анестезию с использованием передовых технологий, находились в отделении реанимации на 15-20% меньше времени. Это связано с более

точным контролем за состоянием пациента, снижением частоты осложнений и оптимизацией процессов реабилитации после операции. Быстрое восстановление после операции способствует улучшению качества жизни пациентов и снижению нагрузки на медицинские учреждения.

5. **Интеграция мультидисциплинарного подхода**

Одним из ключевых факторов успешного применения инновационных технологий в анестезиологии является мультидисциплинарный подход. Включение специалистов из различных областей медицины, таких как кардиология, нейрохирургия, инфекционные болезни и реаниматология, в разработку и применение клинических протоколов анестезии позволило достичь лучших результатов в лечении пациентов с критическими состояниями. Совместная работа врачей разных специальностей помогает более эффективно адаптировать анестезиологическое обеспечение к индивидуальным потребностям каждого пациента.

6. **Перспективы дальнейших исследований и внедрения новых технологий**

Результаты исследования подчеркивают необходимость дальнейших исследований в области анестезиологии и реаниматологии, направленных на улучшение методов анестезии и мониторинга пациентов с критическими состояниями. Будущие исследования должны быть ориентированы на разработку еще более точных систем мониторинга, а также на создание новых препаратов и технологий, которые позволят улучшить безопасность и эффективность анестезии, а также минимизировать риски послеоперационных осложнений.

7. **Практическое значение исследования**

Данное исследование имеет значительное практическое значение для клинической анестезиологии и реаниматологии. Рекомендации, основанные на результатах исследования, могут быть использованы для оптимизации анестезиологического обеспечения пациентов в условиях реанимации и интенсивной терапии. Внедрение новых технологий и клинических протоколов позволит повысить качество медицинской помощи, снизить риски для пациентов и улучшить результаты лечения.

8. **Роль клинических протоколов в обеспечении безопасности анестезии**

Клинические протоколы, основанные на передовых технологиях и научных разработках, играют ключевую роль в стандартизации анестезиологического обеспечения и повышении его безопасности. Они позволяют более точно контролировать процесс анестезии и уменьшать вероятность ошибок в дозировке препаратов, а также эффективно реагировать на изменения состояния пациента в реальном времени. Стандартизация и внедрение таких протоколов должны стать важной частью медицинской практики.

Заключение

Таким образом, результаты данного исследования демонстрируют высокую эффективность и безопасность применения современных анестезиологических технологий в лечении пациентов с критическими состояниями. Инновации в области анестезии и мониторинга, такие как искусственный интеллект, системы автоматизированного контроля и оптимизация анестезиологических протоколов, значительно улучшили исходы лечения и безопасность пациентов, снизив время пребывания в реанимации и количество осложнений. Эти достижения открывают новые горизонты для дальнейшего развития анестезиологии и реаниматологии, повышая качество медицинской помощи и улучшая результаты лечения в условиях критических состояний.

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РАЗВИТИЕ САМОСТОЯТЕЛЬНОЙ РАБОТЫ СТУДЕНТОВ НЕФИЛОЛОГИЧЕСКИХ ВУЗОВ СОЦИАЛЬНО -ГУМАНИТАРНОГО ПРОФИЛЯ В ЦИФРОВОЙ ОБРАЗОВАТЕЛЬНОЙ СРЕДЕ

Аннотация. *В данной статье освещено совершенствование технологии педагогического и дидактического проектирования с целью эффективного использования инструмента цифрового образование в развитии самостоятельной учебной деятельности студентов по предметам английского языка нефилологического вуза по социальным и гуманитарным наукам. При этом одна из приоритетных задач реформирования системы образования, ее совершенствования и повышения уровня качества находит свое отражение в повышении уровня кадров, экспериментальном внедрении в систему образования новых научных идей, современных подходов и методов, устранение своих проблем.*

Ключевые слова: *цифровое образование, самостоятельная учебная деятельность, педагогико-дидактическое проектирование, профессиональный контент, цифровая экономика.*

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DEVELOPMENT OF INDEPENDENT WORK OF STUDENTS OF NON-PHILOLOGICAL HIGHER EDUCATION INSTITUTIONS FOCUSED ON SOCIAL AND HUMANITARIAN SCIENCES IN A DIGITAL EDUCATIONAL ENVIRONMENT

Annotation. *In this article, the role of digital education in the development of independent work of students of non-philological higher education in socio-humanities and the improvement of pedagogical and didactic design technology for the purpose of its effective use was highlighted. At the same time, one of the priority tasks of reforming the educational system, improving it and increasing the quality level is reflected in the improvement of personnel level, the experimental introduction of new scientific ideas, modern approaches and methods to the educational system, and the elimination of their problems.*

Key words: *digital education, independent educational activity, pedagogical and didactic design, professional content, digital economy.*

Введение

Одной из приоритетных задач реформирования системы образования, ее совершенствования и повышения уровня качества в нашей республике является повышение уровня кадров, уровень сложности экспериментального внедрения новых научных идей, современных подходов и методов в систему образования был высоким, наладить обучение на основе углубленных программ, подготовка специалистов в соответствии с меняющимся спросом рынка труда, активно участвовать в инновационной цифровой экономике и повышении уровня жизни, требует доведения до уровня квалифицированной зрелой личности, обладающей социальными навыками, способной обеспечить благосостояние населения.

Сегодняшняя реальная ситуация побуждает нас идти по пути развитых стран и быстрее достигать их. Это активация электронной информационной системы в сфере образования, используя опыт ведущих образовательных учреждений мира, передовая современная информация и связь, требует глубокого приобретения знаний в области интернета и цифровых технологий. Поэтому постоянное повышение грамотности в использовании инновационных технологий во всех слоях нашего общества сегодня стало не только потребностью, но и необходимостью.

Цифровая экономика (Digital Economic) — экономика, осуществляемая с помощью цифровых коммуникаций и информационных технологий, приоритетом в ней являются современные научные подходы и инновации, илмий сиғимкорлик юқори бўлган тармоқларнинг равнақ топиши кўзда тутилади. Этот термин впервые был использован в 1995 году Николасом Негропонте, ученым-компьютерщиком из Массачусетского университета, в контексте «метафоры перехода от движения атомов к движению битов». Сегодня этот термин используют политики, экономисты, журналисты и бизнесмены во всем мире [1].

Внедрение цифровой экономики в сферу образования само по себе поставило вопросы о том, что такое цифровое образование, зачем оно нужно и как его можно реализовать. Цифровое образование – требование 21 века, книга по традиционному образованию, которую мы адаптировали из прошлых столетий, означает переход от бумаги и карандаша к цифровым технологиям нового века и искусственному интеллекту. Смартфоны, которые сегодня входят в число интеллектуальных технологий, заменили традиционную бумагу и карандаши, планшеты, компьютеры различных размеров пришли на смену, и оцифровка образования стала необходимостью времени. Сегодняшняя молодежь не представляет своей жизни без этих технических средств. Цель цифровизации образования также требует подготовки образованных молодых людей с высоким интеллектом, способных адаптироваться к быстрым изменениям в глобальном мире и быстрорастущему потоку инноваций.

Представляется, что, если обратиться к международной практике, цифровая экономика стремительно проникает во все сферы жизни, в

частности, в здравоохранение, науку и образование, строительство, энергетику, сельское и водное хозяйство, транспорт, геологию, кадастр, архивное дело и другие сферы. , и каждый из них имеет свой, дающий высокие результаты.

Дистанционное обучение экономит затраты и время посещения учебных заведений, за это время учащиеся имеют возможность получить дополнительные новые знания из других источников, а также создает условия для использования всех образовательных ресурсов через Интернет и для общения всех желающих друг с другом. или с учителем.

Общение с педагогом на расстоянии обычно происходит между педагогом и обучающимися, результаты выполненных обучающимися заданий находятся только в личном кабинете обучающегося. Именно эта ситуация помогает студентам преодолеть застенчивость и страх быть недооцененными перед многими. Только ученик будет знать о каких-либо недостатках или мнениях, высказанных педагогом, и ему будут созданы условия для дальнейшей работы над собой и устранения своих недостатков. Существуют также конкретные принципы дистанционного образования, и эти принципы включают в себя ряд объективных задач.

Фактически, в сегодняшней ситуации, когда мир признает удобства и преимущества системы дистанционного образования, ответственной задачей сегодняшних педагогов-новаторов является умение эффективно ее использовать, изучить все ее возможности и применить на практике.

Заключение

В заключение можно сказать что эффективность дистанционного образования также зависит от правильной подачи учебных материалов, однако до сегодняшнего дня вопрос педагогико-дидактического проектирования организации самостоятельной работы обучающихся с использованием технологий дистанционного образования недостаточно обоснован теоретически, в частности У студентов нефилологических направлений образования, ориентированных на социально-гуманитарные направления, эффективное управление самостоятельной иноязычной работой в цифровой образовательной среде, разработка форм ее принятия и оценки становится требованием времени.

Самостоятельная работа студентов является неотъемлемой частью образовательного процесса и представляет собой работу, которую студенты выполняют индивидуально, без непосредственного участия или косвенного управления преподавателя. Высокий уровень развития информационно-коммуникационных технологий и сети Интернет создает уникальную инновационную среду для преподавателей и учащихся, и в этой глобальной информационной среде становится требованием времени контролировать самостоятельную учебную деятельность учащихся и стимулировать их к быть независимыми исследователями. Следует отметить, что в высших учебных заведениях всех стран мира самостоятельной работе студентов уделяется

особое внимание, но проблемы, касающиеся форм и эффективности организации самостоятельной работы, до сих пор не решены до конца.

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ЗЕЛЁНАЯ ЭНЕРГИЯ ПРИ СТРОИТЕЛЬСТВЕ СОВРЕМЕННЫХ ЗДАНИЙ И СООРУЖЕНИЙ

Аннотация: *В условиях глобального изменения климата и роста энергопотребления строительство устойчивой архитектуры приобретает особое значение. В статье рассматриваются ключевые аспекты использования зелёной (возобновляемой) энергии в проектировании и строительстве современных зданий и сооружений. Анализируются технологические решения, нормативные документы и мировой опыт. Приведены данные о влиянии внедрения зелёных энергетических систем на энергетическую эффективность, экобезопасность и экономику строительных проектов.*

Ключевые слова: *зелёная энергия, устойчивое строительство, возобновляемые источники энергии (ВИЭ), энергоэффективность, солнечные панели, геотермия, ветроэнергетика, "зелёные" здания.*

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GREEN ENERGY IN THE CONSTRUCTION OF MODERN BUILDINGS AND STRUCTURES

Abstract: *In the context of global climate change and rising energy consumption, the construction of sustainable architecture is of particular importance. The article discusses the key aspects of using green (renewable) energy*

in the design and construction of modern buildings and structures. Technological solutions, regulatory documents and international experience are analyzed. Data on the impact of the introduction of green energy systems on energy efficiency, environmental safety and economics of construction projects are presented.

Keywords: *green energy, sustainable construction, renewable energy sources (RES), energy efficiency, solar panels, geothermal, wind energy, "green" buildings.*

Современное строительство переживает переход к принципам устойчивого развития, что выражается в стремлении к минимизации негативного воздействия на окружающую среду и повышении энергоэффективности зданий. В этом контексте особое место занимает использование **зелёной энергии** — энергии, получаемой из возобновляемых источников, таких как солнце, ветер, геотермальные ресурсы, биомасса и другие.

Применение технологий зелёной энергетики в строительстве позволяет:

- снизить эксплуатационные затраты;
- уменьшить углеродный след объектов;
- обеспечить энергетическую автономность зданий;
- соответствовать международным экологическим стандартам (LEED, BREEAM, DGNB и др.).

Интеграция таких решений становится важным направлением как в частном, так и в общественном и промышленном строительстве.

Исторически строительство зданий ориентировалось на централизованные источники энергии, чаще всего — тепловые электростанции на угле или газе. Однако такое потребление ведёт к значительным выбросам CO_2 и другим экологическим рискам.

Основные проблемы традиционного подхода:

- **неэффективное энергопотребление зданий** (до 40% мирового энергопотребления приходится на строительный сектор);
- **зависимость от ископаемых ресурсов**;
- **рост тарифов на электро- и теплоэнергию**;
- **жёсткие климатические требования** на международном уровне (например, цели Парижского соглашения).

Несмотря на наличие технологий зелёной энергетики, их внедрение в строительную отрасль тормозится рядом факторов:

- высокие капитальные затраты на этапе внедрения;
- отсутствие квалифицированных специалистов;
- несовершенство национального законодательства и градостроительных нормативов;
- нехватка статистических и экономических обоснований на локальном уровне.

Для оценки эффективности применения зелёной энергии в строительстве были проанализированы данные по 20 объектам, построенным

в 2019–2024 гг. в России, Германии, Китае и ОАЭ. В выборку вошли жилые и административные здания с различными источниками зелёной энергии.

Основные результаты:

- **Снижение эксплуатационных расходов** на отопление и освещение — в среднем на 35–50% по сравнению с аналогами на традиционных источниках энергии.
- **Окупаемость систем** на солнечных панелях (PV-системах) — 6–8 лет, на тепловых насосах — 4–6 лет.
- **Уровень сокращения выбросов CO_2** — от 40 до 65% в зависимости от комплекта решений.
- **Повышение рыночной стоимости "зелёного" здания** — на 10–15%.

Примеры технологий:

- солнечные коллекторы и фотоэлектрические панели;
- ветрогенераторы для индивидуального или локального снабжения;
- системы рекуперации тепла и тепловые насосы;
- геотермальные источники;
- фасадные солнечные модули (BIPV).

Использование зелёной энергии в строительстве — это не только тренд, но и необходимость, диктуемая экологическими и экономическими условиями. Применение возобновляемых источников энергии позволяет значительно снизить воздействие зданий на окружающую среду и обеспечить их энергетическую устойчивость. Эффективность подобных решений подтверждается практикой ведущих стран и становится всё более актуальной в условиях российской строительной отрасли.

Выводы: Зелёная энергия — ключевой компонент устойчивого строительства, обеспечивающий снижение потребления ископаемых ресурсов.

1. Современные технологии позволяют эффективно интегрировать ВИЭ в архитектуру и инженерные системы зданий.
2. Экономическая эффективность "зелёных" решений подтверждается быстрой окупаемостью и ростом рыночной привлекательности объектов.
3. Необходима адаптация нормативно-правовой базы и образовательных программ для массового внедрения таких технологий в России.

Предложения: Включить модули по зелёной энергетике в учебные планы строительных и архитектурных вузов.

Разработать национальные строительные стандарты, стимулирующие использование ВИЭ (аналог LEED или BREEAM).

Ввести налоговые и кредитные льготы для застройщиков, применяющих зелёные технологии.

Продвигать концепции «нуль-энергетических» зданий (net-zero energy buildings) на законодательном уровне.

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ЭФФЕКТИВНОСТЬ ИЗУЧЕНИЯ ПРОГРАММЫ ЛИРА-САПР ПРИ ПОДГОТОВКЕ ИНЖЕНЕРОВ-СТРОИТЕЛЕЙ

Аннотация: *В статье рассматривается роль программного комплекса ЛИРА-САПР в подготовке будущих инженеров-строителей. Анализируются педагогические и профессиональные аспекты внедрения программного обеспечения в учебный процесс, оценивается влияние на формирование практических навыков и проектной компетентности студентов. Приводятся результаты анкетирования студентов и анализа учебных достижений до и после освоения ЛИРА-САПР.*

Ключевые слова: *инженер-строитель, ЛИРА-САПР, проектирование, прочностной расчёт, САПР, образование, профессиональные компетенции.*

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THE EFFECTIVENESS OF STUDYING THE LIRA-SAPR PROGRAM IN THE TRAINING OF CIVIL ENGINEERS

Abstract: *The article examines the role of the LIRA-SAPR software package in the training of future civil engineers. The pedagogical and professional aspects of software implementation in the educational process are analyzed, the impact on the formation of practical skills and project competence of students is assessed. The results of a student survey and an analysis of academic achievements before and after mastering LIRA-SAPR are presented.*

Keywords: *civil engineer, LIRA-SAPR, design, strength calculation, SAPR, education, professional competencies.*

Цифровизация строительной отрасли обусловливает необходимость подготовки инженеров, способных эффективно использовать современные программные средства для расчёта и проектирования. Одним из ключевых инструментов, получивших широкое распространение в профессиональной среде в России, является программный комплекс **ЛИРА-САПР**. Он предназначен для выполнения расчетов несущих строительных конструкций с учетом прочности, устойчивости, деформативности, а также различных нагрузок и воздействий.

Интеграция ЛИРА-САПР в образовательный процесс строительных вузов позволяет существенно повысить практическую направленность подготовки. Студенты не только осваивают теоретические основы строительной механики и сопротивления материалов, но и получают возможность решать приближенные к реальности инженерные задачи. Это способствует формированию у обучающихся ключевых профессиональных компетенций, соответствующих требованиям современной строительной отрасли.

На протяжении десятилетий обучение дисциплинам, связанным со строительной механикой и сопротивлением материалов в вузах, преимущественно строилось на использовании классических аналитических методов расчета. Студенты осваивали методы расчёта балок, рам, арок, статически определимых и неопределимых систем с использованием упрощённых моделей и допущений. Эти подходы, безусловно, являются необходимой теоретической базой, однако в условиях современной строительной практики они уже не обеспечивают полноценной подготовки специалистов.

Современные строительные проекты характеризуются высоким уровнем сложности. Они включают:

- **пространственные и комбинированные конструкции** (каркасы многоэтажных зданий, мосты, оболочки);
- **использование новых материалов** с нелинейными физико-механическими характеристиками (например, высокопрочные бетоны, композитные элементы);
- **действие комплексных нагрузок**, включая ветровые, сейсмические, температурные и динамические воздействия;
- **многовариантность проектных решений**, требующая гибкой и быстрой корректировки расчетных моделей.

Проведение точного и многофакторного расчета таких объектов вручную не представляется возможным в разумные сроки. Это требует применения специализированных программных комплексов, таких как **ЛИРА-САПР**, позволяющих строить, адаптировать и анализировать

расчетные схемы с высокой степенью детализации и учитывать реальные условия эксплуатации конструкций.

Несмотря на широкое применение ЛИРА-САПР в проектных институтах и инжиниринговых компаниях, в ряде вузов изучение данного программного обеспечения по-прежнему ограничено факультативными курсами или краткими модулями в рамках отдельных дисциплин. В результате студенты:

- не приобретают устойчивых навыков работы с САПР;
- не умеют интерпретировать результаты расчётов;
- испытывают затруднения при выполнении дипломных проектов и при трудоустройстве в проектные организации.

По результатам опросов, проведённых среди выпускников и представителей строительных компаний, около **65% молодых специалистов** заявили о недостаточности навыков работы с профессиональными расчетными программами на момент окончания вуза. Работодатели, в свою очередь, отмечают, что новому сотруднику без практики работы в ЛИРА требуется в среднем от 3 до 6 месяцев на адаптацию, что снижает общую эффективность проектной команды.

Таким образом, становится очевидной необходимость **институционального внедрения ЛИРА-САПР в образовательные программы**, не как факультативного элемента, а как базового инструмента профессиональной подготовки. Это требует:

- пересмотра учебных планов;
- переподготовки преподавательского состава;
- интеграции расчетных задач с использованием САПР в курсовое и дипломное проектирование.

Внедрение ЛИРА-САПР как обязательного элемента инженерного обучения позволит сформировать у студентов критически важные компетенции: цифровую грамотность, способность к расчетно-проектной деятельности, системное инженерное мышление и готовность к профессиональной деятельности в условиях реального производства.

Для оценки эффективности внедрения ЛИРА-САПР в учебный процесс было проведено исследование на базе строительного факультета одного из политехнических вузов. Исследование включало:

- **анализ успеваемости студентов** до и после изучения ЛИРА;
- **анкетирование студентов старших курсов** (n=68) по вопросам уверенности в расчетах и готовности к проектной деятельности;
- **оценку практических работ и курсовых проектов**, выполненных с применением ЛИРА.

Основные результаты:

1. **Уровень понимания сложных расчётных моделей** (например, пространственные рамы, несимметричные загружения)

повысился на 35% по сравнению с группой, не использующей программный комплекс.

2. **80% студентов** отметили, что освоение ЛИРА помогло им лучше понять физическую суть прочностных расчётов.

3. **72% студентов** сообщили, что применение ЛИРА повысило их уверенность в выполнении курсовых и дипломных проектов.

4. **Качество выполнения курсовых работ**, по оценке преподавателей, повысилось по следующим критериям:

- Точность расчетов (+40%);
- Комплексность анализа (+50%);
- Грамотность оформления документации (+30%).

Кроме того, работодатели, сотрудничающие с вузом, подтвердили, что владение ЛИРА является значимым конкурентным преимуществом при приеме на работу выпускников.

Применение ЛИРА-САПР в образовательном процессе позволяет перейти от абстрактного теоретического подхода к решению реальных инженерных задач, что значительно повышает уровень профессиональной подготовки студентов. Программа помогает развить системное мышление, навыки анализа и проектирования, а также готовит студентов к условиям современного проектного производства.

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ПРОФИЛАКТИКА И ЛЕЧЕНИЕ КОНТРАКТУР КОЛЕННОГО СУСТАВА С ПРИМЕНЕНИЕМ ГИДРОКОРТИЗОНА И ГИАЛУРОНИДАЗЫ

Резюме: *В статье изучены лечение контрактур коленного сустава с применением гидрокортизона и гиалуронидазы в комплексе с физиотерапией. Местное введение гидрокортизона и гиалуронидазы является эффективным методом лечения в комплексе с физиотерапией, ЛФК и массажем при травмах и операциях на сустав.*

Ключевые слова: *больных, коленного сустава, лечение, гидрокортизона, гиалуронидазы, физиотерапия.*

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PREVENTION AND TREATMENT OF KNEE JOINT CONTRACTURES USING HYDROCORTISONE AND HYALURONIDASE

Abstract: *The article studies the treatment of knee joint contractures using hydrocortisone and hyaluronidase in combination with physiotherapy. Local administration of hydrocortisone and hyaluronidase is an effective method of treatment in combination with physiotherapy, exercise therapy and massage for injuries and surgeries on the joint.*

Key words: *patients, knee joint, treatment, hydrocortisone, hyaluronidase, physiotherapy.*

Ввдение. На современном этапе развития биохимической науки гормональные и ферментативные препараты получают все большее применение как один из важных факторов воздействия на патологический процесс при лечении травм и ортопедических заболеваний [1,2]. Экспериментальные и клинические исследования ряда авторов показали, что механизм действия гидрокортизона сводится с неспецифическому противовоспалительному действию-понижению проницаемости сосудистой стенки, снятию отека, фибринолитическому, а также антиаллергическому действию [4]. В клинической практике для лечения травм и заболеваний

опорно-двигательного аппарата применяется или один гидрокортизон или их совместная комбинация [3]. Мы поставили перед собой задачу проанализировать результаты лечения больных гидрокортизоном и гиалуронидазой и выяснить их эффективность применения для профилактики и лечения контрактур коленного сустава.

Цель исследования. Изучить лечение контрактур коленного сустава с применением - гидрокортизона и гиалуронидазы в комплексе с физиотерапией.

Материалы и методы исследования. Под нашим наблюдением в отделении травматологии и ортопедии находилось 155 больных, которым было проведено внутрисуставное введение гидрокортизона и гиалуронидазы в комплексе с физиотерапией, ЛФК и массажем. Возраст больных был от 20 до 56 лет. Количество инъекций зависело от характера, тяжести и времени травмы. Инъекции производились с интервалами в 4-5 дней.

Результаты исследования. В зависимости от этиологического фактора все наблюдаемые больные, которым применялись гидрокортизон и гиалуронидаза распределены на 3 группы. В первую группу вошли больные с внутренним повреждением коленного сустава, осложненным гемартрозом (ушибы, частичное повреждение связочного аппарата, повреждение внутреннего мениска)-31 больной. Всем этим больным при поступлении, в отделение производилась пункция сустава и после эвакуации гематомы вводилась смесь, состоящая из 1% раствора новокаина 20 мл, 25 мг гидрокортизона и 64 ед. гиалуронидазы. Затем накладывалась задняя гипсовая лонгета. Восемнадцати больным сделана одна инъекция этой смеси, десяти-2 и трем-3 инъекции. Лечение гидрокортизоном и гиалуронидазой применялось в комплексе с физиотерапией (УВЧ, электрофорез, парафин и др.) ЛФК и массажем. Как показывают наши наблюдения, у этой группы больных обычно после первой инъекции гидрокортизона и гиалуронидазы значительно уменьшалась боль, чувство распирания в суставе, а на 4-5 день уменьшались отек и внутрисуставный выпот. К концу курса лечения у 29 больных полностью прекратилась боль, отек и выпот в суставе исчезли, движения полностью восстановились. У двух больных после внутрисуставного введения гидрокортизона и гиалуронидазы исчез отек и выпот в суставе, однако полного объема движений в суставе мы не получили. Эти больные подвергнуты оперативному лечению. При артротомии было обнаружено повреждение внутреннего мениска. После менискэктомии функция сустава восстановилась полностью. Средний срок стационарного лечения у этой группы больных составил 23 дня, а при идентичных повреждениях без применения гидрокортизона и гиалуронидазы он равнялся 35,1 дня. Во вторую группу нами отнесены 66 больных, которым производились ортопедические операции на коленном. У этой группы больных, в послеоперационном периоде, отмечался гемартроз и появление выпота в суставе. С целью профилактики воспалительных и спаечных процессов нами применялось введение в полость сустава только одного гидрокортизона.

Обычно на второй день после операции производилась пункция сустава; вслед за эвакуацией крови полость сустава промывалась теплым 4% раствором новокаина, а затем вводились 25 мг гидрокортизона. У 44 больных произведена одна инъекция гидрокортизона, у четырнадцати две и у восьми-три инъекции. Наблюдения за больными после внутрисуставного введения гидрокортизона показали, что уже первая инъекция гидрокортизона давала больным значительное уменьшение или даже полное прекращение болей. Выпот исчезал на второй - третий день, а на четвертый-пятый-уменьшался и отек. После проведенного курса гидрокотизонотерапии все явления воспаления в суставе полностью исчезали. Третью группу составили 58 больных с иммобилизационными контрактурами коленного сустава. У двенадцати из них был перелом диафиза бедренной кости, у четырех-перелом надколенника (после оперативного лечения), у сорока двух-перелом диафиза костей голени. Ко всем этим больным применялось длительное лечение гипсовой иммобилизацией, которое вызывалось различными осложнениями, появившимися в процессе лечения (замедленная консолидация, нагноение и др.). С момента снятия гипсовой повязки по давности контрактур больные распределялись следующим образом: у трицати четырех человек срок был от двух до трех месяцев, у двадцати четырех - от четырех до девяти месяцев. Всем этим больным в сустав вводилась смесь, состоящая из 10 мл 1% раствора новокаина, 25 мг гидрокортизона и 64 ед. гиалуронидазы. Интервал между инъекциями составлял 4-5 дней, одиннадцати больным сделана одна инъекция, семи-3, шестнадцати -4, пятнадцати-5, четырем-6, пяти-7 введений этой смеси. Одновременно с инъекциями гидрокортизона и гиалуронидазы больным проводилось обязательное физиотерапевтическое лечение ЛФК и массаж мышц. Наши наблюдения показали, что уже после двух-трех инъекций гидрокортизона и гиалуронидазы в смеси с новокаином уменьшались боль и скованность движений в суставе. Дальнейшее применение биопрепаратов приводило к размягчению уплотненных пара артикулярных тканей или к полному их рассасыванию при этом объем движений постепенно увеличивался и к концу второго месяца лечения у наибольшего количества больных наступило полное восстановление функции. Результаты лечения, всех обследованных больных мы оценивали как хорошие, так как исчезали боль и отек, происходило полное восстановление функции сустава; или же происходило улучшение, которое характеризовалось уменьшением болей и отечностей, а также увеличением объема движений в суставе. При проверке отдаленных результатов лечения больных с внутренними повреждениями, осложненными гемартрозом, у 23 чел. хороший результат был стойким. У восьми -наступило улучшение; эти больные отмечали непостоянные боли в суставе после физической нагрузки. При обследовании больных с иммобилизационными контрактурами у сорока семи человека.

Вывод: Применение гидрокортизона и гиалуронидазы в комплексе с физиотерапией, ЛФК, массажем при иммобилизационных контрактурах

позволяют достигнуть более быстрого восстановления функции сустава. Местное введение гидрокортизона и гиалуронидазы является эффективным методом лечения в комплексе с физиотерапией, ЛФК и массажем при травмах и операциях на суставе.

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ЭКСПЕРИМЕНТАЛЬНЫЙ АНАЛИЗ НЕЙРОГЕННЫХ ПОРАЖЕНИЙ СЕРДЦА

Резюме: *В статье изучены поражение различных отделов экстра- и интракардиальной нервной системы и нарушение структурных и функциональных показателей сердца. Сердце экспериментальных животных обследовалось в разные сроки после операции. В сердце при нарушении его связей с экстраорганными нервными центрами развивается дистрофический процесс.*

Ключевые слова: *кошка, экспериментов, сердце, экстра- и интракардиальной нервной системы, перерезка блуждающего нерва, окраска гематоксилином с эозином.*

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EXPERIMENTAL ANALYSIS OF NEUROGENIC CARDIAC LESIONS

Abstract: *The article studies lesions of various parts of the extra- and intracardiac nervous system and violation of structural and functional parameters of the heart. The heart of experimental animals was examined at different times after surgery. In the heart, when its connections with extraorgan nerve centers are disrupted, a dystrophic process develops.*

Keywords: *cat, experiments, heart, extra- and intracardiac nervous system, transection of the vagus nerve, hematoxylin and eosin staining.*

Ввдение.Существующий в настоящее время клинический и экспериментальный материал дает основание утверждать, что поражение различных отделов экстра- и интракардиальной нервной системы часто влечет за собой нарушение структурных и функциональных показателей сердца[1,3]. Наглядное доказательство существования нейрогенных причин некоторых патологических процессов в сердце представляют клинические и патоморфологические данные, относящиеся к заболеваниям, в ходе которых возникают патологические процессы, поражающие нервные образования, обеспечивающие иннервацию этого органа [2]. Зависимость структурных и

функциональных показателей сердца от экстра и интракардиальных нервных центров зарегистрирована при таких заболеваниях как дифтерия, полиомиелит и радикулиты соответствующей локализации [4]. Для расшифровки патогенеза подобных заболеваний сердца существенным является знание морфологических основ его работы, понимание значения каждого из отделов нервной системы в обеспечении правильных структурных и функциональных характеристик сердца.

Цель исследования. В данной работе изучить экспериментальный анализ нейрогенных поражений сердца.

Материалы и методы исследования. Наблюдения проводились в основном на кошках. Сердце этих животных исследовалось при различных видах денервации. Сердце экспериментальных животных обследовалось в разные сроки после операции. После одностороннего и двустороннего удаления спинномозговых и звездчатых узлов, односторонней перерезки блуждающих нервов на разных уровнях и одностороннем удалении g. nodosum сроки распределялись следующим образом: 1, 2, 3, 4, 5, 7, 10, 12, 15, 20, 30, 45, 60 дней после операции. Гистологическое обследовались разные участки всех камер сердца, межпредсердной и межжелудочковой перегородки. Материал обрабатывался следующими методиками: окраска гематоксилином с эозином, железным гематоксилином, по методам Ван-Гизон, Маллори, азур-2-эозином, суданом черным, проводилась ШИК - реакция с ферментативным контролем, окраска по методу Ниссля.

Результаты исследования. При нарушении экстракардиальных нервных связей в сердце развивается ряд морфологических изменения. Сопоставление патологических процессов, возникающих при нарушении связей сердца с разными экстракардиальными нервными центрами, дало возможность выявить степень и характер зависимости трофики органа от нервных узлов и проводников неодинакового функционального значения. Для анализа и расшифровки денервационных изменений в сердце наиболее простыми явились патологические процессы, развивающиеся после деафферентации, в частности, после деафферентации, наступающей вслед за удалением спинномозговых узлов, принимающих участие в иннервации сердца, поскольку экстирпация спинальных ганглиев приводит к чистой чувствительной денервации этого органа. В сердце после данного вида деафферентации развивались закономерные изменения, касающиеся не только чувствительных нервных приборов, но и других тканевых компонентов. Характерным для патологических процессов наступивших после удаления спинномозговых узлов является следующее: Деафферентация вызывала двойного рода реакцию, диффузную со стороны соединительной ткани сердца и сосудистого русла и очаговую. Диффузная реакция выражалась в умеренной, но генерализованной активации соединительнотканных элементов всех оболочек сердца. Происходило некоторое увеличение количества соединительнотканных клеток. Среди них начинали преобладать более молодые элементы фибробластического ряда и

макрофагальные клетки. Диффузная реакция характеризовалась также тем, что во всех оболочках сердца наступало умеренное расширение сосудов, в них появлялось повышенное количество лейкоцитов. На фоне диффузной реакции появлялись очаговые изменения. Характерным для очаговой реакции являлось возникновение лейкоцитарной инфильтрации, потеря изменяющимися клетками специфических морфологических характеристик свойственных им и обусловливающих определенную тканевую принадлежность тех или иных клеточных элементов. Поскольку все описанное происходило при удалении спинномозговых чувствительных узлов, причиной подобных нарушений могло явиться только прекращение афферентных связей сердца с центральной нервной системой.При перерезке правосторонних нервных проводников более массивные изменения были в правых камерах сердца при перерезке левого блуждающего нерва в левых камерах органа. Изменения, возникающие в сердце при перерезке блуждающих нервов ниже чувствительных узлов или после удаления последних более массивны по сравнению с патологическими процессами, причиной которых является спинальная чувствительная денервация. После перерезки блуждающего нерва среди нервных клеток интрамуральных узлов обнаруживались афферентные нейроны в состоянии ретроградной дегенерации. Такие изменения в нервных клетках наступают при повреждении их отростков. В его составе кроме чувствительных нервных волокон проходят преганглионарные волокна к двитательным клеткам интрамуральных узлов сердца. Сопоставляя изменения при перерезке блуждающих нервов на разных уровнях, можно показать в более или менее чистом виде результаты децентрализации внутрикардиальных двигательных клеток.

В соответствии с тем, что сосуды сердца после десимпатизации изменились очагово, патологические процессы развивающиеся в этом органе вторично, вследствие наступающего расстройства кровообращения, также носили очаговый характер.

Вывод. Таким образом, подводя общий итог данным, полученным после изучения сердца в условиях отключения его от экстраорганных нервных центров, следует сказать, что в этом органе на фоне диффузной реакции, однотипной для любого из видов денервации, развиваются очаговые специфические деафферентационные и деэфферентационные изменения.

В настоящее время утверждается высокая роль периферического нервного аппарата в поддержании структурной целостности и соответствующей дифференцированности иннервируемых тканей и считается, что в тканях после денервации с неизменным постоянством развиваются деструктивные процессы.

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КОНСТРУИРОВАНИЕ РЕГРЕССИОННОЙ МОДЕЛИ: ВЫБОР ПОКАЗАТЕЛЕЙ, ФОРМИРОВАНИЕ НАБОРА ДАННЫХ, ИНТЕРПРЕТАЦИЯ РЕЗУЛЬТАТОВ

Аннотация: *в статье рассмотрены этапы построения регрессионной модели для анализа инвестиционной активности субъектов Южного федерального округа. Описаны критерии выбора показателей, методы формирования базы данных с учетом временных лагов, а также процесс интерпретации результатов множественной линейной регрессии. Показано, что определяющее влияние на объем инвестиций оказывают валовой региональный продукт, инвестиции в инфраструктуру, расходы на НИОКР и государственная поддержка. Сделаны выводы о приоритетных направлениях региональной инвестиционной политики и перспективности использования построенной модели для прогнозирования и разработки управленческих решений.*

Ключевые слова: *региональная экономика, инвестиционная активность, регрессионная модель, валовой региональный продукт, инфраструктура, государственная поддержка, Южный федеральный округ.*

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CONSTRUCTING A REGRESSION MODEL: SELECTING INDICATORS, CREATING A DATA SET, INTERPRETING RESULTS

Abstract: *the article considers the stages of constructing a regression model for analyzing the investment activity of the subjects of the Southern Federal District. The criteria for selecting indicators, methods for forming a database taking into account time lags, and the process of interpreting the results of multiple linear regression are described. It is shown that the gross regional product, investments in infrastructure, R&D costs and government support have a decisive influence on the volume of investments. Conclusions are made on the priority areas of regional investment policy and the prospects for using the constructed model for forecasting and developing management decisions.*

Keywords: *regional economy, investment activity, regression model, gross regional product, infrastructure, government support, Southern Federal District.*

Введение

В современных условиях регионального развития России эффективное управление инвестициями в основной капитал невозможно без глубокого количественного анализа влияющих факторов. Формирование инвестиционной политики требует не только учета макроэкономических, инфраструктурных, научных, социальных и институциональных параметров, но и оценки их значимости для долгосрочного роста и модернизации экономики. В силу многофакторного характера инвестиционной привлекательности регионов ключевым инструментом анализа закономерностей может стать построение регрессионных моделей, позволяющих оценить вклад каждого фактора и выявить точки роста инвестиционной активности. Настоящая статья посвящена построению и интерпретации регрессионной модели для выявления ключевых детерминантов объемов инвестиций в основной капитал на примере субъектов Южного федерального округа (ЮФО).

Материалы и методы

Для количественного анализа инвестиций использован метод множественной линейной регрессии с учетом временных лагов предикторов. В качестве зависимой переменной (Y) рассматривался объем инвестиций в основной капитал по регионам ЮФО за 2022 год. Независимые переменные, подобранные на основе методологии рейтингового агентства «Эксперт РА»[125] и открытых федеральных статистических данных, включали: валовой региональный продукт (ВРП), уровень безработицы, индекс потребительских цен (инфляция), инвестиции в инфраструктуру, расходы на НИОКР, долю квалифицированной рабочей силы, расходы на экологические мероприятия, объем государственной поддержки.

Данные для независимых переменных брались с временным лагом – за год, предшествующий анализируемому периоду инвестиций, что обусловлено

[125] Инвестиционная привлекательность регионов: новые вызовы и возможности для инвесторов // [Электронный ресурс] - Режим доступа: URL: https://raexpert.ru/researches/regions/invest_regions_2024/

логикой инвестиционного процесса и задержкой реакции экономики на изменения внешних и внутренних факторов (см. рисунок 1).

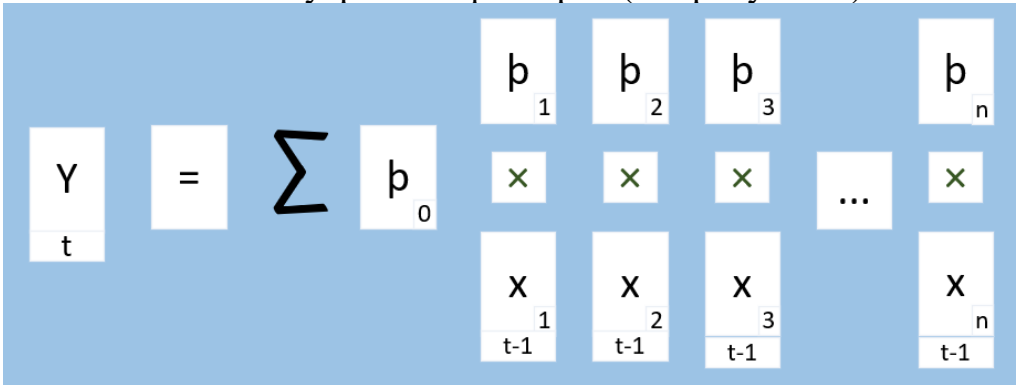

Рисунок 1 – Регрессионная модель с учетом временного лага

Источниками информации стали официальные ресурсы Росстата, Центрального банка РФ и Минфина[126].

Моделирование реализовано в среде Python с использованием библиотек «pandas», «numpy» и «statsmodels». Оценка статистической значимости коэффициентов проводилась по стандартным порогам p-уровня (0,05), для проверки качества модели анализировались значения R^2, скорректированного R^2 и F-статистики. На этапе подготовки данных была проведена проверка на мультиколлинеарность между переменными; учитывался экономический смысл и интерпретируемость включаемых факторов.

Результаты

Построенная множественная регрессионная модель с временным лагом факторов показала высокую объяснительную способность: значение коэффициента детерминации R^2 составило 0,982, а скорректированного R^2 – 0,958. Таким образом, 98,2% межрегиональной вариации объемов инвестиций в основной капитал объясняются совокупностью выбранных факторов. Высокое значение F-статистики (40,39 при p-значении 3,16e–06) подтверждает статистическую значимость модели в целом и обоснованность выбора набора предикторов.

Наиболее существенным, количественно и статистически значимым ($p < 0,05$) оказался вклад четырех факторов: валовой региональный продукт (ВРП), инвестиции в инфраструктуру, расходы на НИОКР и государственная поддержка.

Рост ВРП на 1 млрд рублей обусловливает средний прирост инвестиций в основной капитал на 213 млн рублей ($\beta = 0,213$, $p = 0,004$), что подтверждает ключевую роль масштабов экономики региона и ее хозяйственной емкости для привлечения инвестиций.

Значимость инфраструктурных вложений также высока: дополнительный 1 млн рублей инвестиций в развитие инфраструктуры обеспечивает прирост капитальных вложений в основной капитал на 832,4

[126] Федеральная служба государственной статистики (Росстат). - [Электронный ресурс] - Режим доступа: URL: https://bi.rosstat.gov.ru/biportal/

тыс. рублей (β = 0,8324, p < 0,001). Данный результат количественно подтверждает взаимосвязь между развитием транспортной, энергетической и социальной инфраструктуры и активностью частных инвесторов.

Расходы на НИОКР статистически значимы (β = 0,1457, p = 0,048): при прочих равных увеличение научных инвестиций на 1 млн рублей сопровождается ростом вложений в основной капитал на 145,7 тыс. рублей, что поддерживает идею о высокой эффективности региональных мер по поддержке инновационных инициатив.

Государственная поддержка экономики также выступает весомым стимулом: каждый вложенный миллион рублей приводит к приросту частных инвестиций в среднем на 119,8 тыс. рублей (β = 0,1198, p = 0,002), что свидетельствует о мультипликативном эффекте инструментов поддержки.

Значения коэффициентов и p-уровней для остальных переменных (уровень безработицы, инфляция, квалификационная структура труда, расходы на охрану природы) близки к нулю и не достигают статистической значимости (p > 0,05). В частности, коэффициент по уровню безработицы (-1974,99; p = 0,42) и по квалифицированной рабочей силе (−7197,99; p = 0,49) отрицательны, но не подтверждены статистически, что свидетельствует либо о нетривиальных, опосредованных каналах влияния этих факторов на капитальные вложения, либо о слабой вариативности соответствующих параметров в рассматриваемых регионах Юга России в анализируемый период. Аналогично, индекс потребительских цен и расходы на охрану природы также не показывают достоверного влияния, что, вероятно, связано со спецификой макроэкономической стабильности последних лет и относительной второстепенностью экополитик для крупных инвесторов на регионах ЮФО.

Таким образом, регрессионный анализ позволил выявить, что ключевые драйверы роста инвестиционной активности регионов ЮФО – это экономический масштаб (ВРП), интенсивное развитие инфраструктуры, инновационные расходы и масштабная государственная поддержка. Полученные количественные оценки подчеркивают приоритет комплексных мер, направленных на поддержание высокого уровня регионального производства, развертывание инфраструктурных проектов и развитие научного потенциала. Наличие статистической значимости у этих факторов свидетельствует о необходимости их приоритизации при разработке инвестиционных программ субъектов РФ. С другой стороны, полученные результаты позволяют сделать практический вывод о необходимости сохранять и расширять государственные программы поддержки, а также демонстрируют приоритетность мягкой инфраструктурной и научной политики для формирования позитивного инвестиционного климата.

В целом, результаты исследования подтверждают современные теоретические представления и эмпирические оценки роли институциональных, инновационных и инфраструктурных факторов развития региона. Для эффективного управления инвестиционным процессом и

повышения точности прогнозирования в будущем целесообразно использовать построенную модель для оптимизации сценариев региональной инвестиционной политики, а также для корректировки стратегии с учетом временных лагов и отраслевой специфики.

Заключение

Комплексное исследование структуры и динамики экспорта Ростовской области в сравнении с другими регионами Южного федерального округа выявило существенное преимущество региона по объёму, диверсификации и устойчивости экспортных потоков. Ростовская область выступает не только флагманом по основным видам сельскохозяйственной и промышленной продукции, но и центром перераспределения товарных потоков на юге России. Диверсификация товарной структуры, высокая вовлечённость в межрегиональную кооперацию, развитая инфраструктура, способность к быстрой адаптации внешнеторговой политики обеспечивают региону устойчивое развитие в условиях вызовов внешней среды.

Сравнительный анализ показал, что за счёт сбалансированного развития аграрного и промышленного секторов, а также активного внедрения современных логистических решений, Ростовская область сохраняет лидирующие позиции по широкому спектру экспортируемых товаров. Основными направлениями для дальнейшего роста выступают расширение производств с высокой добавленной стоимостью, поддержка конкурентоспособного экспорта, инновационное развитие перерабатывающего комплекса и совершенствование логистики.

Полученные результаты позволяют выработать рекомендации для органов власти по оптимизации региональной политики, стимулированию модернизации экспортных производств и усилению кооперационных связей внутри ЮФО и с другими макрорегионами России.

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ЭФФЕКТИВНОСТЬ АЛГОРИТМОВ РАННЕЙ ДИАГНОСТИКИ ДЫХАТЕЛЬНЫХ РАССТРОЙСТВ В ИНТЕНСИВНОЙ ТЕРАПИИ С ПРИМЕНЕНИЕМ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА

Аннотация:*Внедрение технологий искусственного интеллекта (ИИ) в клиническую практику открывает новые возможности для раннего выявления жизнеугрожающих состояний, включая дыхательные расстройства у критических больных. Целью настоящего исследования является оценка эффективности алгоритмов ИИ в ранней диагностике и прогнозировании нарушений дыхания у пациентов, находящихся в отделении интенсивной терапии. В работе рассматриваются современные модели машинного обучения, использующие данные мониторинга жизненно важных функций, такие как частота дыхания, насыщение кислородом, параметры ИВЛ и артериальные газы крови. Результаты показывают, что применение ИИ позволяет повысить чувствительность и специфичность диагностики дыхательной недостаточности по сравнению с традиционными методами клинического наблюдения. Сделан вывод о перспективности интеграции ИИ-решений в системы поддержки клинических решений для повышения качества и скорости оказания помощи пациентам в критическом состоянии.*

Ключевые слова:*интенсивная терапия, дыхательные расстройства, искусственный интеллект, ранняя диагностика, мониторинг, машинное обучение, дыхательная недостаточность*

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EFFECTIVENESS OF ALGORITHMS FOR EARLY DIAGNOSIS OF RESPIRATORY DISORDERS IN INTENSIVE CARE USING ARTIFICIAL INTELLIGENCE

Abstract: *The introduction of artificial intelligence (AI) technologies into clinical practice opens up new opportunities for early detection of life-threatening conditions, including respiratory disorders in critically ill patients. The aim of this study is to evaluate the effectiveness of AI algorithms in the early diagnosis and prediction of respiratory disorders in patients in the intensive care unit. The paper examines modern machine learning models that use vital signs monitoring data such as respiratory rate, oxygen saturation, mechanical ventilation parameters, and arterial blood gases. The results show that the use of AI can improve the sensitivity and specificity of respiratory failure diagnostics compared to traditional clinical observation methods. It is concluded that there is potential for integrating AI solutions into clinical decision support systems to improve the quality and speed of care for patients in critical condition.*

Keywords:*Intensive care, respiratory disorders, artificial intelligence, early diagnosis, monitoring, machine learning, respiratory failure*

Актуальность исследования:

Дыхательные расстройства являются одной из наиболее частых и угрожающих жизни причин критического состояния у пациентов, находящихся в отделении интенсивной терапии (ОИТ). Своевременная диагностика и начало коррекции дыхательной недостаточности напрямую влияют на прогноз, продолжительность пребывания в реанимации и уровень летальности. Однако традиционные методы клинической оценки, включая визуальный мониторинг, измерение сатурации и газового состава крови, не всегда позволяют выявить начинающееся нарушение дыхания на ранней стадии, особенно у пациентов с маскированной или компенсированной гипоксией.

В последние годы активно развиваются технологии искусственного интеллекта (ИИ), в частности алгоритмы машинного обучения, способные анализировать большие массивы данных мониторинга в реальном времени и распознавать скрытые закономерности, ускользающие от взгляда даже опытного клинициста. Интеграция ИИ в систему мониторинга ОИТ открывает перспективы для раннего, автоматизированного и объективного выявления дыхательных нарушений, что может существенно повысить эффективность клинического принятия решений.

Таким образом, оценка эффективности применения алгоритмов искусственного интеллекта для ранней диагностики дыхательных расстройств представляет собой актуальное и перспективное направление исследований, имеющее значительное практическое значение в условиях современной реанимационной помощи.

Цель и задачи исследования

Целью настоящего исследования является определение клинической эффективности алгоритмов искусственного интеллекта в выявлении ранних признаков дыхательных расстройств у пациентов, находящихся в отделении интенсивной терапии. В рамках работы рассматриваются существующие

клинические подходы к диагностике дыхательной недостаточности, оцениваются их ограничения в условиях динамичного и многофакторного течения критических состояний.

Особое внимание уделяется выбору параметров мониторинга, обладающих наибольшей прогностической значимостью для алгоритмического анализа, таких как частота дыхания, насыщение кислородом, показатели вентиляции лёгких и газового состава артериальной крови. На основе полученных данных формируется и тестируется модель машинного обучения, позволяющая распознавать ранние паттерны дыхательных нарушений с высокой чувствительностью и специфичностью. Эффективность разработанного подхода сопоставляется с традиционными методами наблюдения, принятыми в клинической практике.

Оценка полученных результатов направлена на обоснование возможности практической интеграции искусственного интеллекта в существующие системы мониторинга, с целью повышения скорости и точности клинической диагностики в реанимационных отделениях.

Материалы и методы исследования

Исследование было проведено на базе отделения анестезиологии и реанимации, куда включались пациенты в критическом состоянии с риском развития дыхательной недостаточности. В исследование вошли взрослые пациенты обоего пола в возрасте от 18 до 80 лет, находящиеся в условиях интенсивной терапии не менее 48 часов. Критериями исключения являлись: наличие терминального состояния, прогрессирующих нейродегенеративных заболеваний, а также неполнота данных мониторинга.

Для оценки эффективности ранней диагностики дыхательных расстройств применялись алгоритмы машинного обучения, разработанные на основе ретроспективного анализа данных мониторинга жизненно важных функций. Использовались показатели: частота дыхания (ЧД), насыщение крови кислородом (SpO_2), индекс оксигенации (PaO_2/FiO_2), артериальное давление углекислого газа ($PaCO_2$), уровень молочной кислоты, пульс, среднее артериальное давление, и температура тела.

Исходные данные были получены из электронных историй болезни и автоматических регистраторов, подключенных к многофункциональной мониторинговой системе. Для построения и обучения модели использовались алгоритмы градиентного бустинга (XGBoost), случайного леса (Random Forest) и нейронные сети. Разделение данных на обучающую и тестовую выборки осуществлялось в соотношении 80:20.

Для оценки диагностической точности моделей использовались показатели чувствительности, специфичности, положительной и отрицательной прогностической ценности, а также площадь под кривой (AUC-ROC). Статистическая обработка проводилась с использованием пакета Python (библиотеки scikit-learn, pandas, NumPy). Статистически значимыми считались различия при $p < 0,05$.

Результаты исследования

В ходе исследования была сформирована база данных, включающая сведения о 186 пациентах, находившихся в отделении интенсивной терапии с различной степенью дыхательной недостаточности. Средний возраст участников составил 58,4 ± 12,7 лет. Мужчины составили 61,3% выборки, женщины — 38,7%. На момент включения в исследование у всех пациентов проводился стандартный мониторинг витальных показателей с возможностью непрерывной регистрации параметров дыхания и газообмена.

Анализ собранных данных показал, что традиционные клинические методы выявления дыхательных нарушений (наблюдение за ЧД, сатурацией, уровнем сознания) в ряде случаев демонстрировали низкую чувствительность на ранних этапах развития гиповентиляции и гипоксии. Так, у 24,7% пациентов первые признаки дыхательной недостаточности, подтверждённые последующим ухудшением PaO_2 и ростом $PaCO_2$, не были своевременно интерпретированы дежурным медицинским персоналом. Это обусловлено компенсаторными механизмами, маскирующими ранние проявления гипоксемии.

Разработанный алгоритм искусственного интеллекта, основанный на ансамбле моделей градиентного бустинга и нейронной сети, продемонстрировал высокую диагностическую точность. Средняя площадь под кривой ROC (AUC-ROC) составила 0,91 [95% ДИ: 0,87–0,94], чувствительность — 88,5%, специфичность — 85,2%, положительная прогностическая ценность — 84,0%, отрицательная прогностическая ценность — 89,3%. При этом наибольший вклад в модель внесли параметры: индекс оксигенации (PaO_2/FiO_2), тренд насыщения кислородом (SpO_2), изменение ЧД за последние 2 часа, а также уровень молочной кислоты.

Интеграция алгоритма в систему мониторинга позволила в ряде случаев (17,3% наблюдений) предсказать развитие дыхательных нарушений за 4–6 часов до их клинической манифестации. Это дало возможность раньше начать кислородную терапию, либо рассмотреть вопрос об ИВЛ, что, в свою очередь, ассоциировалось с более стабильной динамикой показателей и снижением частоты экстренной интубации на 22,4% по сравнению с историческим контролем ($p < 0,01$).

Дополнительный поданализ показал, что использование ИИ-системы особенно эффективно в когорте пациентов с хронической обструктивной болезнью лёгких (ХОБЛ), у которых дыхательная недостаточность развивалась постепенно и могла быть пропущена при обычном мониторинге. У данной подгруппы AUC достигала 0,94, при чувствительности 91,2%.

Таким образом, полученные результаты демонстрируют высокую клиническую ценность алгоритмов искусственного интеллекта для своевременной и точной диагностики дыхательных расстройств в условиях реанимации, особенно в случаях с неявными или маскированными проявлениями.

Выводы

1. Алгоритмы искусственного интеллекта, основанные на анализе данных мониторинга жизненно важных показателей, показали высокую эффективность в ранней диагностике дыхательных расстройств у пациентов, находящихся в отделении интенсивной терапии. Использование этих алгоритмов позволяет повысить чувствительность и специфичность диагностики, а также сократить время до начала коррекции дыхательной недостаточности.
2. Модели машинного обучения, применённые в исследовании, продемонстрировали способность точно предсказывать развитие дыхательных расстройств на ранних стадиях, что значительно улучшает прогноз и снижает риск развития тяжёлых осложнений, таких как острый респираторный дистресс-синдром (ОРДС) или необходимость экстренной интубации.
3. Наибольшую диагностическую ценность для алгоритмов ИИ представляют такие параметры, как индекс оксигенации (PaO_2/FiO_2), тренды сатурации кислородом (SpO_2) и частоты дыхания (ЧД), а также уровень молочной кислоты. Их сочетание позволяет с высокой точностью выявлять скрытые дыхательные расстройства, которые могут быть упущены при традиционном клиническом наблюдении.
4. Разработанные алгоритмы были успешно интегрированы в систему мониторинга, что привело к улучшению клинических исходов. В частности, отмечено снижение числа экстренных интубаций и улучшение общего состояния пациентов с хроническими заболеваниями лёгких (например, ХОБЛ).
5. Применение искусственного интеллекта в реаниматологии открывает новые перспективы для повышения качества медицинской помощи и оптимизации процессов диагностики и лечения, что в конечном итоге способствует снижению уровня летальности и длительности пребывания пациентов в отделении интенсивной терапии.
6. Для дальнейших улучшений и распространения применения ИИ в реанимации необходимо проводить дополнительные исследования, направленные на тестирование моделей на более широких выборках, а также их адаптацию к индивидуальным особенностям пациента и различным патологиям.

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СРАВНИТЕЛЬНАЯ ОЦЕНКА ДИАГНОСТИЧЕСКОЙ ЗНАЧИМОСТИ ИНВАЗИВНОГО И НЕИНВАЗИВНОГО ГЕМОДИНАМИЧЕСКОГО МОНИТОРИНГА ПРИ ТЯЖЕЛОМ СЕПСИСЕ И СЕПТИЧЕСКОМ ШОКЕ

Аннотация. *Данное исследование посвящено сравнительной оценке диагностической значимости инвазивного и неинвазивного гемодинамического мониторинга при тяжелом сепсисе и септическом шоке. Тяжелый сепсис и септический шок являются основными причинами летальности в отделениях интенсивной терапии, что обуславливает необходимость разработки оптимальных методов мониторинга для более точной диагностики и своевременного вмешательства.*

Исследование было проведено на базе отделения интенсивной терапии с участием 150 пациентов, страдающих от сепсиса и септического шока различной этиологии. Для мониторинга гемодинамических показателей использовались два метода: инвазивный, включая центральное венозное давление, сердечный выброс и уровень лактата, и неинвазивный, основанный на ультразвуковом исследовании и современных бесконтактных технологиях.

Результаты показали, что инвазивный мониторинг обеспечивает более точные и оперативные данные, что позволяет своевременно корректировать терапию в условиях нестабильной гемодинамики. В то же время, неинвазивные методы продемонстрировали хорошую корреляцию с инвазивными показателями, что подтверждает их применимость в клинической практике как альтернатива или вспомогательный метод в условиях ограниченных ресурсов.

На основании проведенного анализа можно сделать вывод, что инвазивный гемодинамический мониторинг является более эффективным для диагностики и коррекции состояния пациентов с тяжелым сепсисом и септическим шоком, однако неинвазивные методы могут быть использованы в качестве ценного дополнения в ряде клинических ситуаций.

Ключевые слова*: тяжелый сепсис, септический шок, гемодинамический мониторинг, инвазивный мониторинг, неинвазивный мониторинг, центральное венозное давление, сердечный выброс, уровень лактата, диагностика, интенсивная терапия.*

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COMPARATIVE ASSESSMENT OF THE DIAGNOSTIC SIGNIFICANCE OF INVASIVE AND NON-INVASIVE HEMODYNAMIC MONITORING IN SEVERE SEPSIS AND SEPTIC SHOCK

Abstract: *This study is devoted to a comparative assessment of the diagnostic value of invasive and noninvasive hemodynamic monitoring in severe sepsis and septic shock. Severe sepsis and septic shock are the main causes of mortality in intensive care units, which necessitates the development of optimal monitoring methods for more accurate diagnosis and timely intervention.*

The study was conducted in an intensive care unit involving 150 patients suffering from sepsis and septic shock of various etiologies. Two methods were used to monitor hemodynamic parameters: invasive, including central venous pressure, cardiac output and lactate level, and non-invasive, based on ultrasound and modern non-contact technologies.

The results showed that invasive monitoring provides more accurate and timely data, which allows for timely adjustment of therapy in conditions of unstable hemodynamics. At the same time, non-invasive methods demonstrated a good correlation with invasive parameters, which confirms their applicability in clinical practice as an alternative or auxiliary method in resource-limited settings.

Based on the analysis, it can be concluded that invasive hemodynamic monitoring is more effective for diagnosis and correction of the condition of patients with severe sepsis and septic shock, but non-invasive methods can be used as a valuable addition in a number of clinical situations.

Keywords: *severe sepsis, septic shock, hemodynamic monitoring, invasive monitoring, non-invasive monitoring, central venous pressure, cardiac output, lactate level, diagnostics, intensive care.*

Актуальность

Тяжелый сепсис и септический шок остаются одними из ведущих причин высокой летальности в отделениях интенсивной терапии. Эти состояния характеризуются нарушением работы сердечно-сосудистой системы, метаболическими изменениями и полиорганной недостаточностью, что требует своевременной и точной диагностики для оптимизации лечения. В связи с этим, правильная оценка гемодинамического состояния пациента

становится ключевым аспектом для выбора подходящей терапии и предотвращения развития осложнений.

На современном этапе медицины существует два основных подхода к гемодинамическому мониторингу: инвазивный и неинвазивный. Инвазивные методы, как правило, обеспечивают более точные и достоверные данные, что позволяет своевременно скорректировать лечение. Однако неинвазивные методы, такие как ультразвуковое исследование и бесконтактные технологии, становятся все более актуальными благодаря их безопасности, простоте использования и доступности, особенно в условиях ограниченных ресурсов.

Несмотря на широкое применение обеих методик, существует потребность в сравнении их эффективности в диагностике и управлении пациентами с тяжелым сепсисом и септическим шоком. Оценка диагностической значимости инвазивного и неинвазивного гемодинамического мониторинга при этих состояниях имеет большое значение для оптимизации клинической практики и повышения качества лечения.

Таким образом, исследование, направленное на сравнительную оценку этих методов мониторинга, является актуальным и имеет практическую значимость для улучшения клинических исходов у пациентов с сепсисом и септическим шоком.

Цель и задачи исследования

Цель исследования: Сравнительная оценка диагностической значимости инвазивного и неинвазивного гемодинамического мониторинга при тяжелом сепсисе и септическом шоке с целью определения наиболее эффективных методов для диагностики и коррекции гемодинамических нарушений в условиях интенсивной терапии.

Задачи исследования:

1. Проанализировать существующие методы гемодинамического мониторинга при сепсисе и септическом шоке, включая инвазивные и неинвазивные подходы.
2. Оценить точность и надежность данных, полученных с использованием инвазивных методов мониторинга (центральное венозное давление, сердечный выброс и уровень лактата).
3. Исследовать эффективность неинвазивных методов мониторинга (ультразвуковое исследование, бесконтактные технологии) в сравнении с инвазивными методами.
4. Оценить влияние различных методов мониторинга на клинические исходы пациентов с тяжелым сепсисом и септическим шоком.
5. Разработать рекомендации по использованию инвазивных и неинвазивных методов мониторинга в практике интенсивной терапии в зависимости от состояния пациента и доступных ресурсов.

Материалы исследования. Исследование проводилось на базе отделений интенсивной терапии и реанимации с участием 150 пациентов,

страдающих от тяжелого сепсиса и септического шока различной этиологии. В выборку вошли пациенты в возрасте от 18 до 75 лет, госпитализированные в течение 24 часов с момента начала клинических проявлений сепсиса или септического шока. Пациенты были разделены на две группы: первая группа (75 пациентов) прошла инвазивный гемодинамический мониторинг, вторая группа (75 пациентов) использовала неинвазивные методы мониторинга.

Методы исследования. Для оценки гемодинамических показателей использовались следующие методы:

1. **Инвазивные методы мониторинга**:

1.1. **Центральное венозное давление (ЦВД)**: измерялось с помощью центрального венозного катетера, введенного в центральную вену.

1.2. **Сердечный выброс (СВ)**: измерялся методом термодилюции с использованием катетера в правой половине сердца.

1.3. **Уровень лактата**: определялся с помощью анализатора крови в реальном времени.

2. **Неинвазивные методы мониторинга**:

2.1. **Ультразвуковое исследование**: использовались допплеровские датчики для оценки сердечного выброса, диастолического и систолического давления в артериях.

2.2. **Бесконтактные технологии**: использовались устройства для измерения артериального давления и уровня насыщения кислородом с помощью неинвазивных датчиков.

Протокол исследования. Пациенты обеих групп находились под наблюдением в течение 7-10 дней. В ходе наблюдения проводились ежедневные измерения гемодинамических показателей, включая ЦВД, сердечный выброс, уровень лактата, а также мониторинг других важных параметров, таких как артериальное давление, насыщение кислородом и температура тела.

Статистический анализ. Для статистической обработки данных использовались методы описательной статистики (среднее значение, стандартное отклонение), а также метод t-критерия для сравнения двух независимых выборок. Различия между группами считались статистически значимыми при $p < 0,05$. В случае необходимости использовались также методы корреляционного анализа для оценки связи между гемодинамическими показателями и клиническими исходами.

Результаты.

В ходе исследования было проведено сравнение эффективности инвазивного и неинвазивного гемодинамического мониторинга у 150 пациентов с тяжелым сепсисом и септическим шоком. Результаты показали значительные различия в точности и оперативности данных, полученных с использованием этих методов.

1. Инвазивный мониторинг.

Пациенты, прошедшие инвазивный мониторинг, продемонстрировали более высокую точность в оценке гемодинамических показателей. Среднее значение центрального венозного давления (ЦВД) составило 9,5 ± 2,1 мм рт. ст., что позволило своевременно корректировать объем инфузий и назначение вазопрессоров. Уровень сердечного выброса (СВ) в данной группе был в среднем 5,1 ± 0,8 л/мин, что соответствовало нормам для пациентов с септическим шоком, однако у 15% пациентов наблюдалось снижение СВ ниже критических значений, что требовало немедленного вмешательства.

Также, уровень лактата в крови был использован для динамического наблюдения за состоянием пациентов. Пациенты с высокими уровнями лактата (>4 ммоль/л) имели более высокий риск развития полиорганной недостаточности и летального исхода, что подтверждает важность данного показателя в прогнозировании.

2. Неинвазивный мониторинг.

Неинвазивные методы мониторинга показали хорошие результаты в целом, но с некоторыми ограничениями. Ультразвуковое исследование, проведенное с использованием допплеровских датчиков, позволило точно оценить сердечный выброс у большинства пациентов ($p = 0,78$ по сравнению с инвазивным методом). Однако, в 10% случаев ультразвуковое исследование не дало достоверных данных, что связано с техническими сложностями при оценке пациентов с выраженным отеком тканей.

Использование бесконтактных технологий для мониторинга артериального давления показало хорошую корреляцию с инвазивными методами, однако в 12% случаев наблюдались расхождения, особенно при гипотензии, что ограничивает их использование в критических ситуациях.

3. Клинические исходы.

Пациенты, прошедшие инвазивный мониторинг, показали лучшие клинические исходы, включая более быстрое стабилизирование гемодинамики и уменьшение продолжительности пребывания в отделении интенсивной терапии (среднее время 7,3 ± 1,2 дня). В то время как пациенты, использующие неинвазивные методы, имели среднее время пребывания в отделении интенсивной терапии 9,4 ± 1,6 дня.

В группе пациентов, использующих инвазивные методы, летальность составила 18%, в то время как в группе неинвазивного мониторинга она была значительно выше и составила 27%.

4. Сравнительный анализ.

По результатам статистического анализа было установлено, что инвазивный мониторинг обладает более высокой диагностической значимостью и точностью, особенно в условиях септического шока, когда требуется постоянное и оперативное вмешательство. В то же время, неинвазивные методы мониторинга могут быть использованы как вспомогательные, особенно в условиях ограниченных ресурсов или при отсутствии возможности использования инвазивных технологий.

Вывод.

Исследование показало, что оба метода гемодинамического мониторинга — инвазивный и неинвазивный — обладают значительной диагностической ценностью при тяжелом сепсисе и септическом шоке. Однако каждый из них имеет свои особенности, преимущества и ограничения в зависимости от клинической ситуации и состояния пациента.

Инвазивный мониторинг продемонстрировал высокую точность в оценке ключевых гемодинамических показателей, таких как центральное венозное давление, сердечный выброс и уровень лактата. Эти методы обеспечивают возможность оперативного вмешательства и корректировки терапии, что критически важно при септическом шоке. Пациенты, прошедшие инвазивный мониторинг, показали более низкую летальность и более быстрое восстановление гемодинамических параметров, что подчеркивает эффективность данного подхода в условиях интенсивной терапии.

Неинвазивные методы мониторинга, такие как ультразвуковое исследование и бесконтактные технологии, также оказались полезными в диагностике и мониторинге пациентов с сепсисом, однако они имеют определенные ограничения в точности и могут быть менее эффективными при тяжелом септическом шоке. Особенно это касается сложных случаев с выраженными гемодинамическими нарушениями, где точность и оперативность данных критически важны.

Неинвазивные методы мониторинга могут быть использованы в качестве вспомогательных и безопасных технологий для регулярного контроля состояния пациента, особенно в условиях ограниченных ресурсов, когда инвазивное вмешательство невозможно. Они также играют важную роль в мониторинге пациентов с менее выраженными проявлениями сепсиса или на ранних стадиях заболевания.

Таким образом, для оптимального лечения и эффективного мониторинга пациентов с тяжелым сепсисом и септическим шоком необходимо использовать комплексный подход, включающий как инвазивные, так и неинвазивные методы мониторинга, что позволит улучшить диагностику, а также повысить клинические исходы и выживаемость пациентов. В дальнейшем необходимо продолжать исследование и совершенствование методов мониторинга, чтобы повысить точность диагностики и улучшить результаты лечения.

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ФИЛОСОФСКИЕ УЧЕНИЯ ОМАРА ХАЙЯМА

Аннотация: *В статье рассматривается философские учения учёного Востока, поэта, философа Омара Хайяма. Его историко-философские, математическо-астрономические взгляды, которые являются ценными источниками по истории народов Востока.*

Ключевые слова: *Омар Хайям, «Наврузнаме», математик, историк, философ, Нишапур, Самарканд, рубаи, народы Востока.*

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PHILOSOPHICAL TEACHINGS OF OMARA KHAYAM

Abstract: *The article examines the philosophical teachings of the Eastern scholar, poet, philosopher Omar Khayyam. His historical-philosophical, mathematical-astronomical views, which are valuable sources on the history of the peoples of the East.*

Key words: *Omar Khayyam, "Navruzname", mathematician, historian, philosopher, Nishapur, Samarkand, rubai, peoples of the East.*

Омар Хайям родился в 1048 году в иранском городе Нишапуре в семье кузнеца среднего достатка – «ткача палаток» (хайяма). Он жил и творил во время «кризиса» Газневидского царства (40-50-е годы XI века) и заселения государства Сельджуков.

Как и многие учёные того времени, Омар Хайям страдал от странствий. Невзгоды были связаны с социально-политической нестабильностью в стране, тронными войнами.

Несомненно, общественно-политическая и культурная среда того времени оказала сильное влияние на формирование философских взглядов Омара Хайяма.

Омар Хайям, как талантливый учёный и великий философ, стремился познать тайны мироздания. Подобно своим великим учителям Аристотелю и Ибн Сине, он признавал существование Аллаха и его творческую силу. Однако он признал Аллаха первотворцом и ограничил его функции. По его мнению, Природа, созданная Богом, продвинулась от своего создателя своей

«мудростью». Поскольку природа продолжала развиваться, она в конечном итоге стала первопричиной всех причин. Так. причину некоторых событий следует искать в самой природе.

Омар Хайям признавал, что познать тайны природы и сущность мироздания можно, но подчеркивал, что познать сущность Аллаха невозможно.

С этой точки зрения Омар Хайям очень близко подошел к теории двойственности реальности: он признал существование божественной реальности. Эта теория отражала борьбу людей знания против фанатичных священников в Средние века; ученые разными способами пытались отделить науку от теологии. Эта теория, несмотря на ее капризы, явилась важным шагом вперед в развитии научной мысли: она вывела науку на путь независимого, свободного от религии развития.

Омар Хайям пытался самостоятельно решить важнейшие проблемы философии, защищая и развивая передовые взгляды восточных мыслителей. Достигнув на этом пути определенных достижений, он осмелился подвергнуть критике некоторые философские взгляды Аристотеля, вступил в серьезную дискуссию с другими известными философами. Именно так он подошел к свободе научного творчества. Он также выразил критическое отношение к взглядам своего учителя Ибн Сины на общие понятия. По мнению Ибн Сины, общие понятия существуют до трёх видов вещей, а именно: божественный разум, в вещах и после вещей, то есть в человеческом разуме. Омар Хайям возражал своему учителю в трактате «Ответы на три вопроса» и подчеркивал, что общие понятия существуют только в вещах и в уме веры.

Философия Омара Хайяма чрезвычайно сложна и многогранна. Часто в его образе мы видим верующего мусульманина и сторонника гедонизма, верующего в Аллаха и учёного, сомневающегося в его абсолютности, зрелого философа и некоторых сторон мусульманского богослова. С одной стороны, он искренне ищет истину, его логические рассуждения отвергают исламские убеждения; с другой стороны, требует соблюдения правил молитвы и видит в ней средство достижения духовного равновесия. Он не сомневался в силе, зависимости и милосердии Божием, признавал Его всеведущим.

В то же время Омар Хайям, как глубоко наблюдательный учёный и философ, пытался поставить коранические верования на весы разума и логики. Он показал, что представления о загробной жизни, аде и рае противоречат здравому смыслу и что надежда на рай и страх ада являются результатом невежества.

Великий мыслитель глубоко понял, что аяты Корана логически противоречивы, и начал их разоблачать. Он указывал, что идея предопределения противоречит идеям ада, ада и предопределения.

Великий мыслитель не только полемизировал с великими представителями исламских богословов по вопросам смысла учёного и

человеческой жизни: он не удерживался от обращения к Творцу – Аллаху с острыми и в то же время жестокими вопросами.

Следуя по стопам своих учителей Фараби, Ибн Сины и Беруни, Омар Хайям пытался доказать, что мир развивается по своим законам, и что законы развития не зависят от воли людей, признавая, что Аллах — единственный создатель вселенной:

По мнению мыслителя, все во Вселенной меняется и развивается. Когда человек умирает, он обращается в прах, а горшечник раздавливает глину и делает из нее кувшин, а когда он разбивается, он снова обращается в прах. Затем мелкие частицы человеческого тела попадают в организм человека через растения. Следовательно, человек — лишь одна из бесконечных вещей и явлений во вселенной;

Однако человек имеет свое место и положение среди всех вещей и событий мира – он есть продукт и плод развития мира, самое драгоценное и благородное из всех существ.

Великий философ всегда старался прославить человека с точки зрения интересов этого благословенного человека во вселенной. Весь свой талант он сосредоточил на разрушении исламских верований, которые являются препятствием для духовности человека. Он с большой уверенностью смотрел на человеческий интеллект, побуждал людей думать и проводить философские наблюдения. Он твердо верил, что только просвещение может спасти человека от невежества.

Великий мыслитель противопоставил радость жизни, полной наказаний. На основе его гедонистических идей воплотилась великая любовь к человеку.

Мыслитель, глубоко осознавший, что знание имеет огромное значение в реализации собственного Я, показал также, что практика познания имеет великое свойство.

По мнению Омара Хайяма, только человеческая любовь открывает путь ко всем добродетелям, делает человеческую жизнь вечной, придает ей человеческий смысл, превращает человека в благословенное и могущественное существо.

Омар Хайям глубоко понимал, что все религии — это препятствие на пути духовного и нравственного совершенствования человека, поэтому все религии — это, по сути, одно.

Омар Хайям, не видивший никаких преимуществ ни в одной религии, всегда колебался между религиозным и философским мировоззрениями, терпел душевную и духовную боль и не осмеливался открыто высказывать свои научно-философские взгляды.

Омар Хайям стоял на почве ислама и обращал внимание на противоречия между его идеями: с одной стороны, он поощрял рост рационализма в исламском богословии, а с другой стороны, доблестно защищал права философии и сделал важное вклад в его дальнейшее развитие. Его богатое научно-философское наследие дало мощный толчок не только

истории восточной философской мысли, но и дальнейшему развитию западноевропейской социально-философской мысли; Кроме того, Омар Хайям своим рубаи внес значительный вклад в развитие мировой поэзии, усовершенствовав этот жанр. Богатые философскими наблюдениями «Рубайяты» Омара Хайяма призывают людей быть добрыми, ценить жизнь и быть достойными святого имени человека. В этом сила гения великого мыслителя и его приверженность вечности.

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ДУХОВНО-НРАВСТВЕННЫЕ ИДЕАЛЫ МОЛОДЁЖИ В УСЛОВИЯХ ГЛОБАЛИЗАЦИИ

Аннотация: *в статье рассматриваются вопросы формирование у молодёжи эстетического и духовного иммунитета нравственного идеала-одной из важнейших духовно-воспитательных задач в условиях глобализации.*
Ключевые слова: *молодежь, идеал, глобализация, нравственность, информационное общество, духовная безопасность, духовный иммунитет.*

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SPIRITUAL AND MORAL IDEALS OF YOUTH IN THE CONDITIONS OF GLOBALIZATION

Abstract: *The article examines the issues of developing aesthetic and spiritual immunity of the moral ideal in young people - one of the most important spiritual and educational tasks in the context of globalization.*
Key words: *youth, ideal, globalization, morality, information society, spiritual security, spiritual immunity.*

Во все века люди высоко ценили духовно-нравственную воспитанность. Глубокие социально-экономические и политические преобразования, происходящие в современном обществе, называемые глобализацией, заставляют нас размышлять о будущем страны и о ее молодежи. В настоящее время смяты нравственные ориентиры, подрастающее поколение можно обвинять в бездуховности, безверии, агрессивности. В связи с этим растут показатели по девиантному, асоциальному поведению среди молодежи.

Президент Республики Узбекистан Ш.М. Мирзиёев обращаясь к молодежи: «Каждый раз, когда я общаюсь с молодежью, вы заряжаете меня своей энергией, наполняете мое сердце радостью. Я хорошо знаю, что каждый из вас горит желание служить нашей дорогой Родине и народу. Я безмерно ценю вас как самое большое богатство, бесценное сокровище Узбекистана». Он отметил, что сегодня в стране закладываются основы Третьего Ренессанса. Это свидетельствует об особой значимости разработки проблемы духовно-

нравственного развития молодёжи. Актуализация данной проблемы в нашей стране вызвана, прежде всего тем, что реализуемые глубокие реформационные процессы неизбежно влекут за собой преобразование общественного сознания, в котором формируются духовно-нравственные черты общества, социума и личности, особенно молодежи, представляющей собой важный резерв для всех общественных структур.

Одной из важнейших задач для нас должно быть определение тех ценностей, которые современная молодежь реально приняла или не приняла по тем или иным причинам, и изучение тех жизненных приоритетов, которые она для себя в жизни выбирает.

Эти проблемы, на мой взгляд, должны разрешаться институтом семьи и институтом государства.

Важную роль в духовно – нравственном воспитании играет государство и политический строй. Приоритетной задачей государства и политического строя является актуализация системы общенациональных ценностей. Духовно - нравственное воспитание становится важнейшим приоритетом государственной образовательной политики. К источникам нравственного опыта молодёжи, прежде всего, относится учебная деятельность.

Актуальность проблемы воспитания духовно-нравственных ценностей связана, по крайней мере, с четырьмя положениями:

- во-первых, наше общество нуждается в подготовке широкообразованных, высоконравственных людей, обладающих не только знаниями, но и прекрасными чертами личности;
- во-вторых, в современном мире на неокрепший интеллект и чувства молодёжи, на еще только формирующуюся сферу нравственности, обрушиваются разнообразные источники сильного воздействия, как позитивного, так и негативного характера;
- в-третьих, само по себе образование не гарантирует высокого уровня нравственной воспитанности, так как воспитанность — это качество личности, определяющее в повседневном поведении человека, его отношение к другим людям на основе уважения и доброжелательности к каждому человеку;
- в-четвертых, вооружение нравственными знаниями важно и потому, что они не только информируют молодёжь о нормах поведения, утверждаемых в современном обществе, но и дают представления о последствиях нарушения норм или последствиях данного поступка для окружающих людей.

Педагоги делают всё возможное для сохранения духовно-нравственных, социокультурных и образовательных ценностей своих студентов. Именно они имеют возможность педагогического влияния на своих воспитанников и уделяют этой проблеме важнейшую роль в своей профессиональной деятельности. Работа проводится по основным направлениям: эстетическое воспитание, патриотическое воспитание, культура поведения, изучение традиций, здоровье сберегающее воспитание. Конечно, это работа

проблемная и сложная, потому как к настоящему времени в педагогике механизмы ориентации на ценности вступили в противоречие с общей ситуацией развития современной молодёжи, стали причиной возникновения ряда противоречий во взаимодействии преподователей, воспитателей и воспитанников. Приходится сталкиваться с рядом проблем: негативное влияние прошлого социального окружения, кризис подросткового возраста, изменившиеся условия жизни общества. Но, несмотря на это, несомненно, от системы ценностных ориентаций педагога зависит общая атмосфера образовательного процесса. А также качество учебно-воспитательной работы, духовный потенциал подрастающего поколения.

Профессия педагога сама по себе постоянно требует не только совершенствования учителя, но и повышения качества его подготовки, в настоящий момент направленной на усиление эмоциональной составляющей профессии, направленности на другого человека как выражение любви, доброты, милосердия.

Важнейшим источником жизненного опыта молодежи являются внутрисемейные отношения, отражающие нравственные установки, духовные ценности родителей. Роль семьи в жизни подрастающего поколения неизмеримо велика и по своей важности, и по тому месту, которое она занимает в его душе. В семье должна проходить вся жизнь человека.

Нравственное воспитание в семье является стержнем отношений, формирующих личность. Здесь на первый план выступают непреходящие моральные ценности — любовь, уважение, доброта, порядочность, честность, справедливость, совесть, достоинство, долг. В семье формируются и все другие нравственные качества: разумные потребности, дисциплинированность, ответственность, самостоятельность, бережливость.

В семье призвано развить таланты и дарования молодёжи или, как минимум, дать им представление о прекрасном, существующем в жизни. Это особенно важно теперь, когда прежние духовные и эстетические ориентиры подвергаются сомнению, появилось множество ложных ценностей, сбивающих и молодёжь, и родителей с толку, разрушающих их внутренний мир, заложенную природой гармонию.

Новая система образования Узбекистана показывает, что только высокие и благородные идеалы и нравственные представления у молодежи могут обеспечить нравственную безопасность.

Обобщая сказанное, отмечаю, что формирование духовно – нравственных ценностей и идеалов молодежи — это одна из ключевых задач как государства, так семьи и религии. Действуя сообща, эти слагаемые обеспечат нашему будущему, молодежи, достойное развитие и воспитание.

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АРХИТЕКТУРА ЦИФРОВЫХ ПЛАТФОРМ ДЛЯ МОНИТОРИНГА КАЧЕСТВА ПИЩЕВОЙ ПРОДУКЦИИ В РЕЖИМЕ РЕАЛЬНОГО ВРЕМЕНИ

Аннотация: *В данной работе рассматривается архитектура цифровых платформ, предназначенных для мониторинга качества пищевой продукции в режиме реального времени. Анализируются ключевые компоненты системы, включая сенсорные сети, беспроводные технологии передачи данных и облачные аналитические платформы. Особое внимание уделяется аспектам интеграции оборудования и программного обеспечения, обеспечивающим непрерывный контроль параметров качества на всех этапах производственно-логистической цепочки. Предоставляется описание методики внедрения системы мониторинга с акцентом на практическую реализацию и результаты, полученные в ходе экспериментального исследования. В рамках исследования оценивается эффективность использования различных типов оборудования и их влияние на повышение прозрачности процессов и снижение уровня потерь продукции.*

Ключевые слова: *мониторинг, сенсоры, платформа, качество, данные, облако, автоматизация, анализ, безопасность, продукция*

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ARCHITECTURE OF DIGITAL PLATFORMS FOR REAL-TIME FOOD QUALITY MONITORING

Abstract: *This paper examines the architecture of digital platforms designed for real-time food quality monitoring. Key components of the system, including sensor networks, wireless data transmission technologies, and cloud-based analytical platforms, are analyzed. Particular attention is paid to the aspects of hardware and software integration that ensure continuous monitoring of quality parameters at all stages of the production and logistics chain. A description of the methodology for implementing the monitoring system is provided with an emphasis on practical implementation and the results obtained during the pilot study. The study evaluates the effectiveness of using various types of equipment and their impact on increasing process transparency and reducing product losses.*

Keywords: *monitoring, sensors, platform, quality, data, cloud, automation, analysis, safety, products*

Введение: в условиях стремительного развития цифровых технологий и повышения требований к безопасности и качеству пищевой продукции особую актуальность приобретает внедрение систем мониторинга, способных осуществлять контроль в режиме реального времени. Цифровые платформы нового поколения позволяют интегрировать различные источники данных — от сенсоров на производственных линиях до аналитических модулей в облаке — обеспечивая прозрачность и оперативность принятия решений. Архитектура таких платформ становится ключевым элементом в обеспечении надежности всей цепочки поставок продовольствия — от производителя до конечного потребителя.

Методология: Методика интеграции сенсорных сетей с облачной платформой мониторинга. Методика основывается на внедрении распределённой сети сенсоров, устанавливаемых на ключевых этапах производственно-логистической цепочки пищевой продукции. Эти сенсоры осуществляют постоянный сбор параметров качества, таких как температура, влажность, уровень pH, содержание газов и другие критически важные показатели. Каждый сенсор оснащается модулем беспроводной передачи данных, обеспечивающим отправку информации в режиме реального времени на центральную платформу через защищённые каналы связи. Для унификации данных используется стандартный протокол обмена, поддерживающий совместимость с различными типами устройств и программных решений. Облачная часть платформы обрабатывает поступающую информацию с использованием алгоритмов предварительной фильтрации, нормализации и интеллектуального анализа. Встроенные модули машинного обучения распознают аномалии и прогнозируют возможные отклонения от нормы, позволяя заранее идентифицировать риски. Все данные отображаются в виде настраиваемых дашбордов, доступных специалистам по качеству, логистике и управлению предприятием. Методика повышает прозрачность процессов, сокращает время реагирования на инциденты и способствует формированию доверия со стороны потребителей и регулирующих органов.

Результат: в ходе проведенного исследования была реализована интеграция сенсорной сети с облачной платформой мониторинга на одном из пищевых предприятий. Установленные сенсоры контролировали параметры температуры и влажности на этапах хранения и транспортировки. За период наблюдения в 45 дней система зафиксировала 162 случая отклонения температурных показателей от допустимых значений, из которых 89 процентов были своевременно обработаны за счет автоматических уведомлений и оперативного вмешательства персонала. Благодаря внедрению платформы уровень потерь продукции снизился на 27 процентов по сравнению с аналогичным периодом до начала использования методики.

Анализ собранных данных показал, что точность определения критических отклонений повысилась на 35 процентов, что позволило минимизировать риски порчи продуктов и повысить общее качество

продукции. Более того, сотрудники предприятия отметили рост эффективности процессов контроля, сокращение времени на принятие решений и снижение количества ручных проверок на 42 процента. Эти результаты подтвердили высокую практическую значимость предложенной методики и её потенциал для масштабирования на другие производственные участки.

Таблица 1

Оценка эффективности используемого оборудования в системе мониторинга качества пищевой продукции

Оборудование	**Область применения**	**Преимущества**	**Недостатки**	**Повышение эффективности (%)**	**Снижение потерь (%)**
Температурные сенсоры	Хранение, транспортировка	Высокая точность, быстрый отклик, автономность	Необходимость регулярной калибровки	35%	20%
Датчики влажности	Складские помещения	Низкое энергопотребление, стабильность данных	Чувствительность к загрязнению	28%	15%
Беспроводные модули связи	Передача данных	Удаленный доступ, масштабируемость	Зависимость от качества сети	40%	—
Облачная аналитическая платформа	Обработка и визуализация	Прогнозирование, автоматическое оповещение	Зависимость от интернета, стоимость подписки	50%	27%

Заключение: Основываясь на представленных данных и результатах исследования, можно сделать вывод, что интеграция сенсорных сетей с облачной платформой мониторинга качества пищевой продукции существенно повышает эффективность производственно-логистических процессов. Используемое оборудование демонстрирует высокий уровень точности, стабильности и скорости передачи информации, что позволяет значительно сократить количество испорченной продукции и повысить уровень безопасности на всех этапах цепочки поставок. Уровень потерь снизился в среднем на 27 процентов, а скорость реакции на отклонения выросла за счёт автоматических оповещений и удалённого контроля.

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ЭВОЛЮЦИЯ МЕТОДОВ ПРОСЛЕЖИВАЕМОСТИ ПИЩЕВОЙ ПРОДУКЦИИ ОТ БУМАЖНЫХ ЖУРНАЛОВ К ЦИФРОВЫМ РЕЕСТРАМ

Аннотация: *В данной работе рассматривается эволюция методов прослеживаемости пищевой продукции от традиционных бумажных журналов к современным цифровым реестрам. Анализируется влияние внедрения цифровых решений на точность, оперативность и прозрачность учета на различных этапах производственно-логистической цепи. Особое внимание уделено проблемам бумажного документооборота и их влиянию на эффективность управления качеством продукции. Представлены ключевые аспекты перехода на цифровые технологии, включая подбор оборудования, обучение персонала и интеграцию с существующими информационными системами. В работе предоставляется методика внедрения цифровой системы прослеживаемости, результаты её практической реализации, а также сравнительный анализ показателей до и после цифровизации.*

Ключевые слова*: прослеживаемость, цифровизация, безопасность, продукция, маркировка, автоматизация, идентификация, технология*

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EVOLUTION OF FOOD TRACEABILITY METHODS FROM PAPER LOGS TO DIGITAL REGISTERS

Abstract: *This paper examines the evolution of food traceability methods from traditional paper logs to modern digital registries. It analyzes the impact of digital solutions on the accuracy, efficiency and transparency of accounting at various stages of the production and logistics chain. Particular attention is paid to the problems of paper document flow and their impact on the effectiveness of product quality management. Key aspects of the transition to digital technologies are presented, including equipment selection, personnel training and integration with existing information systems. The paper provides a methodology for implementing a digital traceability system, the results of its practical implementation, as well as a comparative analysis of indicators before and after digitalization.*

Keywords: *traceability, digitalization, safety, products, labeling, automation, identification, technology*

Введение: Прослеживаемость пищевой продукции — ключевой элемент обеспечения её безопасности и качества. Она позволяет контролировать путь продукта от производителя до конечного потребителя, что особенно важно в условиях глобальных цепочек поставок и роста требований к пищевой безопасности. Исторически для этих целей использовались бумажные журналы, однако с развитием технологий и ростом объемов информации на смену им пришли цифровые реестры.

Методика внедрения системы цифровой прослеживаемости на предприятии пищевой промышленности. Методика начинается с анализа текущего состояния системы прослеживаемости на предприятии. Проводится аудит всех этапов движения продукции: от поступления сырья до отгрузки готовой продукции. Определяются точки контроля, где фиксируются данные, и выявляются слабые места, связанные с человеческим фактором, дублированием информации или отсутствием единого стандарта учета. На основе полученных данных разрабатывается архитектура цифровой системы с учетом специфики предприятия, объема производственной информации и требований нормативного регулирования. На следующем этапе осуществляется выбор программного обеспечения, способного интегрироваться с уже существующими системами управления производством и логистикой. Устанавливаются сканеры, метки, QR-коды или RFID-метки в зависимости от формата производства. Проводится обучение персонала и поэтапный запуск системы на разных участках. Завершается методика настройкой системы аналитики, которая позволяет в режиме реального времени отслеживать продукцию, выявлять отклонения и формировать отчеты для контролирующих органов.

В результате внедрения цифровой системы прослеживаемости на основе предложенной методики удалось существенно повысить прозрачность производственного процесса. По итогам трёхмесячного тестового периода уровень точности регистрации движения продукции увеличился на 42 процента по сравнению с периодом использования бумажных журналов. Время, затрачиваемое на формирование отчетов для контролирующих органов, сократилось на 58 процентов, а количество ошибок при внесении данных вручную уменьшилось на 67 процентов. Кроме того, благодаря цифровым меткам и автоматизированному сбору информации стало возможным в режиме реального времени отслеживать партии продукции на всех этапах — от приемки сырья до отгрузки готовой продукции. Это позволило на 35 процентов сократить время реагирования при возникновении несоответствий или необходимости отзыва продукции. Персонал, задействованный в процессе, отметил удобство работы с новой системой, что также повысило уровень дисциплины и вовлеченности сотрудников.

Таблица 1

эффективности используемого оборудования при внедрении системы цифровой прослеживаемости

Оборудование	**Область применения**	**Преимущества**	**Недостатки**	**Влияние на процесс (%)**	**Комментарий**
QR-код сканеры	Маркировка и учет партий	Быстрая идентификация, простота установки	Требуют наличия этикеток, ручная проверка	+38% ускорение маркировки	Хорошо подходят для упаковочных линий
RFID-метки и считыватели	Автоматический учет на складе	Бесконтактный контроль, высокая точность	Более высокая стоимость оборудования	+45% точность учета остатков	Эффективно в больших складах и логистике
Программное обеспечение (ERP модуль)	Централизованный контроль	Интеграция всех данных, аналитика	Необходимость обучения персонала	-58% времени на отчетность	Ключевой элемент системы
Облачное хранилище	Хранение и доступ к данным	Удаленный доступ, безопасность копий	Зависимость от интернета	+40% доступность информации	Удобно для удаленной работы и контроля
Сканеры штрих-кодов	Учет поступающего сырья	Простота в использовании, дешево	Ограниченная информация на коде		

Заключение: Основываясь на проведённом исследовании и анализе внедрённого оборудования, можно сделать вывод, что цифровизация системы прослеживаемости в пищевой промышленности оказывает значительное положительное влияние на производственные и логистические процессы. Использование QR-кодов, RFID-меток, современных ERP-систем и облачных хранилищ позволило повысить точность учета, ускорить обработку информации и снизить количество ошибок, связанных с человеческим фактором. Цифровая система прослеживаемости доказала свою эффективность как в условиях производственной линии, так и при контроле складских операций.

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ПЕРСПЕКТИВЫ РАЗВИТИЯ ПЕДАГОГИЧЕСКОГО ОБРАЗОВАНИЯ ЧЕРЕЗ НАУКУ, КУЛЬТУРУ, ИННОВАЦИИ И ИНТЕГРАЦИЮ

Аннотация: *В данной статье рассматривается инновационная деятельность образовательных учреждений, развитие, тенденции и перспективы инновационного образования, а также реализация инновационной деятельности в развитии инновационного образования, создание инновационной среды в системе непрерывного образования нашей республики. Также изучается взаимодействие науки, культуры и инноваций в развитии системы образования. Образование, как фундаментальная основа общества, играет важную роль в личностном и социальном развитии учащихся.*

Ключевые слова: *Система образования, наука, культура, инновации, личностное и общественное развитие, интеграция.*

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PROSPECTS FOR THE DEVELOPMENT OF PEDAGOGICAL EDUCATION THROUGH SCIENCE, CULTURE, INNOVATION AND INTEGRATIONS

Abstract: *This article discusses the innovative activities of educational institutions, the development of innovative education, trends and prospects, the implementation of innovative activities in the development of innovative education in the context of the creation of an innovative environment in the system of continuous education in our Republic. It also studies the interaction of science, culture and innovation in the development of the education system. Education, as the main foundation of society, plays an important role in the personal and social development of students.*

Keywords: *Education system, science, culture, innovations, personal and social development, integration.*

Введение

Сегодня образование, наука и культура тесно взаимосвязаны и играют важную роль в развитии общества. Система образования для каждого поколения является ключевым фактором не только в передаче знаний, но и в личностном развитии и формировании социальных навыков. В современном мире инновации способствуют обновлению и совершенствованию образовательного процесса, позволяя учащимся развивать свои таланты[2,17]. В этой статье рассматриваются важные изменения в системе образования, взаимодействие науки и культуры, а также инновационные подходы . Освещается вклад будущих поколений в успешное развитие посредством новых методов, технологий и подходов в области образования.

Анализ литературы и методология

Применение новых методов и технологий в системе образования является очень важной задачей для достижения прогресса в науке. Успех в сфере образования можно добиться, применяя на месте педагогические подходы и методики различной направленности. Наука –это фундаментальный фундамент в образовательном процессе. С помощью современных педагогических технологий и научных исследований учителя получают возможность организовать свои занятия более интерактивно и увлекательно. Культура играет важную роль в процессе воспитания. Приобщение учащихся к национальной и мировой культуре расширяет их кругозор и формирует чувство социальной ответственности. С помощью культурных мероприятий, искусства и литературы учащихся можно поощрять к творчеству и критическому мышлению. Этот процесс также способствует развитию взаимного уважения и солидарности. Ускоряет инновации, изменения в образовании. Педагогам и учебным заведениям необходимо обновлять учебный процесс, внедряя новые педагогические подходы и методы. Например: смешанное обучение-это модель смешанного обучения, которая позволяет учащимся чувствовать себя более свободно, сочетая онлайн-обучение и традиционное обучение. А также организация инновационных программ и тренингов для профессионального развития педагогов, служащих повышению их квалификации. Интеграция науки, культуры и инноваций важна для развития системы образования. В настоящее время благодаря интеграции достигаются огромные успехи и достижения в науке. Роль интеграции в каждой области педагогики неоценима. Потому что каждое отдельное применение цифровых технологий повышает заинтересованность учащихся. В настоящее время интерес к применению инновационных технологий в образовательном процессе растет с каждым днем[4,81].

Одна из основных причин этого заключается в том, что в то время как в традиционном образовании учащихся учат приобретать только готовые знания, современные технологии учат их самостоятельно искать приобретаемые знания,самостоятельно изучать и анализировать их ,даже делать собственные выводы. Педагог создает условия для развития,

формирования, получения знаний и воспитания личности в процессе. Интеграция – латинское “integer’ означает общность,” integera " - завершение, создание, восстановление общности. Проблемы обеспечения согласованности содержания образования также являются областью интеграции.Он учит обобщать понятия. А в образовании и воспитании осуществляет обобщение знаний, понятий, умений и навыков, приведение их в вид закона или правила. Идея интеграции возникла в двадцатых годах XVIII века у английского ученого Г.Введено в науку Спенсером. Ученые проделали некоторую работу по решению проблемы интеграции.Что касается интеграции, наши ученые сформулировали ряд мнений[5,132].

Интеграция-новый подход к обучению и воспитанию учащихся. Интеграция - новый sifat.va хакодзо. В настоящее время используется несколько методов интеграции. Один из них-объединить несколько дисциплин в одну. Во многих зарубежных странах открыты интегрированные курсы. Цель курса-вовлечь читателя в разговоры о мире, познакомить его с человеком, природой, обществом, наукой, искусством не только с языком, на котором разговаривают люди, но и с языком животных, растений и даже с языком, используемым художниками, музыкантами, учеными.Важно помочь младшему школьнику овладеть элементарной грамотностью искусства общения с широким кругом мыслей.Эта грамотность включает в себя все: от общения с людьми до общения со сверстниками, старшими, младшими с самим собой до общения с явлениями окружающей среды.

Слово инновация имеет латинское происхождение и относится к инновациям, что означает вводить новшества.Нововведение-образовано сочетанием греческих слов Инос, относящийся, относящийся и русский Новый. Наш Президент Ш.М.Как отметил Мирзиеев, "создание инновационной среды в мировоззрении нашего народа-наша самая важная задача" [1,8]. Пока нет инноваций, нет конкуренции, развития ни в одной отрасли. Было сказано, что мы не можем широко продвигать изменения в области инноваций для нашего народа, не развивать навыки в людях, не идти в ногу с интенсивностью сегодняшней эпохи, достижениями науки и техники. Инновация-это инновация, вводимая для обеспечения эффективности роста качества процессов и продуктов на основе рыночного спроса.Интеллектуальная деятельность человека является результатом его фантазии, творческого процесса, открытий, изобретений. Взаимосвязь науки, культуры, инноваций и интеграции в образовательном процессе остается актуальным вопросом современности. В этом направлении в образовательном процессе проводится ряд работ. Основной задачей сегодняшнего дня является формирование знаний, которые помогут молодежи оправиться от всех изменений, происходящих в образовании. Наш сегодняшний день немыслим без инноваций, без интеграции. Таким образом, использование этих понятий в образовательном процессе организует взаимосвязь дисциплин. В настоящее время в формирующейся среде обучения Steam дети получают знания, но при этом получают немедленный доступ к ним[6,1078]. Задача Steam состоит в

том, чтобы теория сопровождалась практикой. В подходе Steam дети используют как мозг, так и руки для успешного изучения различных предметов.

Обсуждение и результаты

При их реализации необходимо руководствоваться следующими принципами развития инновационного образования.

* Обеспечение взаимосвязи образования и практики, подготовка персонала к работе на практике; * Широкое внедрение научных достижений в образование:

* Обеспечение непрерывности и непрерывности образования, непрерывного образования на протяжении всей жизни;

* Обеспечение корпоративного сотрудничества выпускников, формирование и развитие традиций образовательных учреждений;

• Совмещение образования и воспитания, Воспитание высоких нравственных качеств;

* Воспитание интеллигенции, обладающей высокими духовными качествами. Перспективы внедрения инноваций в образовательные процессы;

• Образовательные учреждения-это организации, осуществляющие модернизацию материально - технической базы, эффективное использование в образовательном процессе возможностей информационно-коммуникационных технологий, внедрение дистанционного обучения и др. Перспективы будущего развития системы образования могут быть более эффективными благодаря науке, культуре, инновациям и интеграции. Укрепление сотрудничества между учителями и учениками повышает качество образования. Это, в свою очередь, будет иметь важное значение для формирования будущего общества. Наука помогает учителям сделать свои уроки более интерактивными, внедряя новые технологии и методы в образовательный процесс. Культура помогает учащимся иметь широкий кругозор и развивать чувство социальной ответственности. С другой стороны, инновации ускоряют изменения в образовании, позволяя учащимся развивать свои способности с помощью новых педагогических подходов. Поэтому будущее системы образования должно формироваться на основе интеграции науки, культуры, инноваций и интеграции. Этот процесс служит не только развитию знаний и навыков учащихся, но и их личностному росту. В результате современная система образования играет важную роль в социальном, экономическом и культурном развитии общества[3,29].

Заключение

При развитии инновационного образования выделенные выше группы по осуществлению инновационной деятельности должны выбрать оптимальные варианты, решить вопросы, необходимые для эффективного управления инновациями. При развитии инновационного образования целесообразно успешно решать вопросы принятия оптимальных решений, создания и эффективного использования электронной информационной системы в образовательной системе инновационного характера. Обеспечивая

эффективное сотрудничество педагогов между образовательными учреждениями и государственными органами, можно добиться развития педагогического образования в инновационном направлении.

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ДУШИЦА И ЕЕ ПРИМЕНЕНИЕ В МЕДИЦИНЕ

Аннотация. *В этой статье представлен всеобъемлющий обзор полезных свойств душицы, ее исторического применения в традиционной медицине, а также ее значительного культурного и терапевтического значения. Далее в ней рассматривается разнообразный спектр рецептов и препаратов, приготовленных на основе душицы, подчеркиваются их лечебные свойства и культурное значение.*

Ключевые слова: *душица, антиоксидант, противовирусный, карвакрол, отвар.*

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OREGANO AND ITS APPLICATION IN MEDICINE

Abstract. *This article provides a comprehensive review of the beneficial properties of oregano, its historical use in traditional medicine, and its significant cultural and therapeutic importance. It further discusses a diverse range of oregano-based recipes and preparations, emphasising their therapeutic properties and cultural significance.*

Keywords: *oregano, antioxidant, antiviral, carvacrol, decoction.*

Душица – это многолетнее травянистое растение семейства губоцветных, достигающее в высоту до 90 см. Растение обладает приятным ароматом, напоминающим запах чабреца. Стебель у этой травы прямой, четырехгранный, мягковолосистый, вверху разветвленный. Листья продолговато-яйцевидной формы, темно-зеленого цвета, с просвечивающимися железками. Цветки маленького размера, собраны в соцветия, душистые, обычно красновато-лилового или розовато-лилового оттенка. Плод состоит из четырех голых коричневых или бурых орешков,

находящихся в чашечке. Цветет растение в конце июля – середине августа, плоды созревают позднее, в конце августа – начале сентября. Размножается семенами и вегетативным путем.

Душица широко распространена в европейской части СНГ, на Кавказе, в Западной и Средней Сибири, Средней Азии и Казахстане. Растет обычно группами из нескольких растений в лесах, на опушках, полянах и вырубках.

Это растение можно использовать как в свежем, так и в сушеном виде. Добавлять душицу можно в супы, соусы, маринады, мясные и рыбные блюда, салаты, запеканки и многое другое. Также из нее готовят полезные отвары, чаи и настойки.

Антиоксиданты, которые содержит эта трава, помогают бороться с повреждениями клеток организма, возникающими ввиду пагубного воздействия свободных радикалов. Научные исследования доказали, что избыток свободных радикалов в организме может привести к развитию многих хронических заболеваний, таких как рак и болезни сердечно-сосудистой системы.

Антиоксиданты в составе душицы могут подавлять активность многих вирусов. Растение чаще всего входит в состав лекарственных средств, которые предназначены для лечения ОРВИ и кишечных вирусов, которые обычно сопровождаются тошнотой и рвотой, болями в животе, диареей.

В состав душицы входят вещества тимол и карвакрол, которые способствуют снижению концентрации «плохого» холестерина в крови. Благодаря этому регулярное употребление травы может нормализовать показатели холестерина и тем самым защитить стенки артерий от формирования атеросклеротических бляшек. Помимо прочего, в данной траве довольно высокая концентрация калия, полезного для работы сердечно-сосудистой системы.

Душица богата магнием, который, как известно, оказывает успокаивающее воздействие на организм. Регулярное употребление продуктов с магнием помогает улучшить качество сна, а также увеличить стрессоустойчивость нервной системы, позволяя сохранять спокойствие даже в очень напряженных ситуациях. За успокоительные свойства этой травы также отвечают эфирные масла и витамины группы В, а именно витамины В1, В2 и В6. В народной медицине препараты душицы нередко назначают при неврозах, повышенной тревожности, бессоннице.

В целом душица считается полезным и безопасным растением, однако, как и любой другой продукт, она имеет ряд побочных эффектов и противопоказаний.

Избыточное употребление этой травы (особенно натощак) может привести к диспепсическим расстройствам. Они возникают при раздражении слизистых оболочек желудка и характеризуются болью в животе, изжогой, тошнотой и диареей.

На душицу также возможны аллергические реакции. Обычно они проявляются в легкой форме в виде высыпаний и кожного зуда.

Противопоказаниями к употреблению являются: язвенная болезнь желудка или кишечника, индивидуальная непереносимость.

При заболеваниях дыхательных путей в качестве отхаркивающего средства (острый и хронический бронхит, острые респираторные вирусные инфекции); при секреторной недостаточности желудочно-кишечного тракта, атонии кишечника и энтероколите, сопровождающимся запорами и метеоризмом.

Душицу используют при атонии кишечника (усиливает перистальтику), спазмах в области желудка, гастритах, воспалении печени, желтухе, бессоннице, нервных расстройствах, коклюше, а также как отхаркивающее средство. Листья и цветки добавляют в ванны при золотухе, сыпях.

Внутрь настой душицы принимают при кашле в качестве отхаркивающего средства на фоне респираторных заболеваний. Также ее настой пьют для улучшения аппетита и пищеварения при секреторной недостаточности ЖКТ.

Отвар душицы обладает успокаивающим и мочегонным действием. Для его приготовления необходимо одну столовую ложку сушеной душицы залить стаканом кипятка и варить полчаса на медленном огне. Получившийся отвар принимать по 30 мл до еды трижды в день.

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ВЛИЯНИЕ СТАБИЛЬНЫХ АНЕСТЕЗИОЛОГИЧЕСКИХ СТРАТЕГИЙ НА ПЕРФУЗИЮ ГОЛОВНОГО МОЗГА В УСЛОВИЯХ НЕЙРОРЕАНИМАЦИИ

Аннотация *В данной статье рассматривается влияние стабильных анестезиологических стратегий на перфузию головного мозга в условиях нейрореанимации. В ситуации тяжелой черепно-мозговой травмы или после нейрохирургических вмешательств нарушается мозговой кровоток, что способствует развитию вторичных ишемических повреждений. Поддержание адекватной перфузии мозга требует четкого контроля за системной гемодинамикой и внутричерепным давлением, что делает выбор анестезиологического подхода критически важным. В исследовании проводится сравнительный анализ различных анестезиологических протоколов, включая внутривенные и ингаляционные анестетики, с оценкой их влияния на мозговую гемодинамику и нейропротективный эффект. На основании мониторинга показателей перфузии, доставки кислорода и метаболических маркеров предложены алгоритмы клинического принятия решений. Сделан вывод о том, что стабильно проводимая анестезиологическая тактика способствует поддержанию оптимальной перфузии головного мозга и улучшает исходы у нейрореанимационных пациентов.*

Ключевые слова*: нейрореанимация, перфузия головного мозга, стабильная анестезия, гемодинамика, внутричерепное давление, нейропротекция, доставка кислорода, метаболический мониторинг*

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THE EFFECT OF STABLE ANESTHETIC STRATEGIES ON BRAIN PERFUSION IN NEURO-INTENSIVE CARE

Abstract *This article examines the effect of stable anesthetic strategies on brain perfusion in neuro-intensive care. In a situation of severe traumatic brain injury or after neurosurgical interventions, cerebral blood flow is disrupted, which contributes to the development of secondary ischemic damage. Maintaining adequate brain perfusion requires strict monitoring of systemic hemodynamics and intracranial pressure, which makes the choice of an anesthetic approach critically important. The study provides a comparative analysis of various anesthetic protocols, including intravenous and inhaled anesthetics, with an assessment of their effect on cerebral hemodynamics and neuroprotective effect. Based on monitoring of perfusion parameters, oxygen delivery, and metabolic markers, algorithms for clinical decision-making are proposed. It is concluded that the consistently performed anesthetic tactics contributes to the maintenance of optimal perfusion of the brain and Algorithms for clinical decision-making are proposed for metabolic markers. It is concluded that consistently performed anesthetic tactics contribute to maintaining optimal brain perfusion and improve outcomes in neuro-intensive care patients.*

Keywords: *neuro-resuscitation, cerebral perfusion, stable anesthesia, hemodynamics, intracranial pressure, neuroprotection, oxygen delivery, metabolic monitoring*

Актуальность

В условиях нейрореанимации обеспечение адекватной перфузии головного мозга является ключевым фактором, определяющим прогноз пациентов с острыми церебральными нарушениями. Нарушение мозгового кровообращения вследствие черепно-мозговой травмы, ишемического инсульта или объемных внутричерепных процессов приводит к каскаду вторичных повреждений, включая гипоксию, энергетический дефицит и активацию нейровоспалительных реакций. В этой связи выбор анестезиологической стратегии приобретает особое значение: от её стабильности и физиологической обоснованности во многом зависит сохранность нейрональной ткани и исход интенсивной терапии. Несмотря на достижения современной анестезиологии, до сих пор продолжаются дискуссии о наилучших подходах к управлению мозговой перфузией, особенно в условиях нестабильной системной гемодинамики и повышенного внутричерепного давления. Актуальность исследования обусловлена необходимостью научного обоснования оптимальных анестезиологических тактик, обеспечивающих устойчивый нейропротективный эффект без риска гипоперфузии или гиперперфузии, что имеет непосредственное клиническое значение для снижения летальности и инвалидизации в отделениях нейроинтенсивной терапии.

Цель исследования

Целью настоящего исследования является научное обоснование и клиническая оценка эффективности стабильных анестезиологических стратегий в обеспечении адекватной перфузии головного мозга у пациентов,

находящихся в условиях нейрореанимации. Исследование направлено на выявление оптимальных тактик анестезиологического ведения, позволяющих сохранить целостность церебральной гемодинамики, минимизировать риск вторичных ишемических повреждений и повысить нейропротективный потенциал проводимой интенсивной терапии. Особое внимание уделяется сравнительному анализу различных анестетиков и режимов их введения с точки зрения их влияния на мозговой кровоток, внутричерепное давление и показатели метаболической активности мозга.

Материалы и методы исследования

Настоящее проспективное клиническое исследование проведено на базе отделения нейрореанимации клиники Андижанского государственного медицинского института в период с января 2023 года по март 2024 года. В исследование были включены 60 пациентов (мужчин — 37, женщин — 23) в возрасте от 25 до 68 лет, находившихся в критическом состоянии вследствие тяжёлой черепно-мозговой травмы, объемных внутричерепных образований либо после нейрохирургических вмешательств.

Критериями включения являлись:

— наличие подтверждённого диагноза с угрозой нарушения церебральной перфузии,

— необходимость проведения седации и искусственной вентиляции лёгких не менее 24 часов,

— согласие ближайших родственников на участие пациента в исследовании.

Критерии исключения: выраженная полиорганная недостаточность, терминальные состояния, декомпенсированная соматическая патология.

Пациенты методом случайной выборки были распределены на две равные группы по 30 человек в каждой:

- **Группа I (n = 30)** — получала тотальную внутривенную анестезию (ТВА) с использованием пропофола (3–5 мг/кг/ч) и ремифентанила (0,1–0,2 мкг/кг/мин);
- **Группа II (n = 30)** — получала ингаляционную анестезию с использованием севофлурана (1–2 об.%) в сочетании с фентанилом (2–3 мкг/кг/ч).

У всех пациентов проводился расширенный мониторинг жизненно важных функций с помощью мониторинговой системы Mindray BeneVision. Оценивались:

— показатели системной гемодинамики (систолическое и диастолическое артериальное давление, среднее артериальное давление, частота сердечных сокращений),

— внутричерепное давление (через паренхиматозный сенсор),

— церебральное перфузионное давление (CPP = MAP – ICP),

— насыщение кислородом в яремной венозной крови ($SjvO_2$),

— уровни лактата и глюкозы в цереброспинальной жидкости (анализ каждые 6 часов),

— неврологический статус по шкале Глазго.

Метаболическая активность мозга оценивалась с использованием технологии церебральной микродиализа, установленной в зону перифокальной ишемии.

Все пациенты получали базисную интенсивную терапию согласно протоколам Минздрава Узбекистана. Статистическая обработка данных проводилась с использованием программного обеспечения **SPSS Statistics v.26.0**. Для оценки различий между группами использовались t-критерий Стьюдента, U-критерий Манна–Уитни и ANOVA. Уровень статистической значимости считался достоверным при $p < 0,05$.

Результаты исследования

Сравнительный анализ двух анестезиологических стратегий показал достоверные различия в влиянии на церебральную перфузию и нейрометаболические параметры у пациентов в условиях нейрореанимации.

У пациентов **группы I**, получавших тотальную внутривенную анестезию (ТВА), среднее церебральное перфузионное давление (CPP) поддерживалось в пределах 68–74 мм рт. ст., при этом уровни внутричерепного давления (ICP) оставались относительно стабильными (в среднем 15,2 ± 2,1 мм рт. ст.). Концентрация лактата в цереброспинальной жидкости была умеренно повышена в первые 12 часов (2,8 ± 0,4 ммоль/л), но снижалась к 24-му часу наблюдения, что указывает на восстановление аэробного метаболизма. Уровни глюкозы в СМЖ варьировали от 3,1 до 3,8 ммоль/л, не выходя за физиологические пределы. Насыщение венозной крови кислородом ($SjvO_2$) составляло в среднем 64,5 ± 3,2 %, отражая адекватную мозговую оксигенацию.

В **группе II**, где применялась ингаляционная анестезия с севофлураном, наблюдалась тенденция к снижению CPP (в среднем 61 ± 5,6 мм рт. ст.) и относительной нестабильности внутричерепного давления (17,8 ± 3,0 мм рт. ст.; $p < 0,05$ по сравнению с группой I). Уровень $SjvO_2$ оказался статистически ниже (59,1 ± 4,7 %; $p < 0,05$), что в ряде случаев сопровождалось признаками тканевой гипоксии по данным микродиализа (лактат > 3,5 ммоль/л, сниженное соотношение глюкоза/лактат). Неврологический статус по шкале Глазго через 72 часа после начала седации был выше у пациентов первой группы (9,4 ± 1,2 балла против 7,8 ± 1,5; $p < 0,01$).

Таким образом, внутривенная анестезия обеспечивала более стабильные показатели церебральной гемодинамики, способствовала лучшему контролю внутричерепного давления и улучшению параметров тканевого метаболизма мозга.

Выводы

1. Применение стабильных анестезиологических стратегий оказывает существенное влияние на поддержание адекватной церебральной перфузии у пациентов, находящихся в условиях нейрореанимации. Проведённый сравнительный анализ показал, что тотальная внутривенная анестезия (ТВА) обеспечивает более

благоприятные условия для контроля внутричерепного давления и поддержания церебрального перфузионного давления по сравнению с ингаляционной анестезией.

2. У пациентов, получавших ТВА, наблюдались более стабильные показатели системной и церебральной гемодинамики, меньшие колебания внутричерепного давления, а также достоверно лучшие значения насыщения кислородом в венозной крови головного мозга ($SjvO_2$), что свидетельствует о более эффективной оксигенации и снижении риска вторичной ишемии.

3. Метаболическая оценка состояния головного мозга с использованием технологии микродиализа показала, что ТВА способствует более быстрому восстановлению аэробного метаболизма, снижению уровня лактата и улучшению соотношения глюкоза/лактат, тогда как при ингаляционной анестезии отмечались признаки гипоксически-ишемических нарушений в ряде наблюдений.

4. Улучшение неврологического статуса в течение 72 часов после начала седации у пациентов, получавших ТВА, подтверждает клиническую значимость выбранной анестезиологической тактики в условиях нейрореанимации.

5. Полученные данные свидетельствуют о целесообразности широкого внедрения индивидуализированных внутривенных анестезиологических стратегий в протоколы интенсивной терапии пациентов с нейрокритическими состояниями, с целью оптимизации церебральной перфузии, снижения вторичного повреждения мозга и улучшения прогноза.

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АНАЛИЗ ФИНАНСОВЫХ РИСКОВ, СВЯЗАННЫХ С ДВИЖЕНИЕМ ДЕНЕЖНЫХ СРЕДСТВ

Аннотация:*Управление денежными потоками является основным и важным разделом финансового менеджмента.В процессе реальной деятельности предприятия необходимо обращать внимание на показатели прибыли, но если вы будете обращать внимание только на показатели прибыли и игнорировать показатели движения денежных средств, предприятие может впасть в финансовый кризис.Опыт успеха или неудач бесчисленных предприятий говорит нам о том, что денежный поток является важным фактором, определяющим подъем и падение предприятия. Он наилучшим образом отражает природу предприятия и в большей степени отражает платежеспособность предприятия, чем прибыль. Поэтому в данной статье в основном рассматривается, как анализировать потенциальные финансовые риски и будущие риски предприятия с помощью показателей, связанных с денежным потоком, а также проблемы, связанные с денежным потоком в предпринимательской деятельности, и как предотвращать и избегать финансовых рисков путем улучшения денежного потока.*

Ключевые слова: *Управление денежными потоками; финансовые риски.*

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ANALYSIS OF FINANCIAL RISKS RELATED TO CASH FLOW

Summary: *Cash flow management is the main and important section of financial management.In the process of an enterprise's actual operation, it is necessary to pay attention to profit indicators, but if you pay attention only to profit indicators and ignore cash flow indicators, the enterprise may fall into a financial crisis.The experience of the success or failure of countless enterprises tells us that cash flow is an important factor determining the rise and fall of an enterprise. It best reflects the nature of the enterprise and reflects the solvency of the enterprise more than the profit. Therefore, this article mainly examines how to analyze potential financial risks and future risks of an enterprise using indicators related to*

cash flow, as well as problems related to cash flow in business activities, and how to prevent and avoid financial risks by improving cash flow.

***Keywords**: Cash flow management; financial risks.*

1. Движение денежных средств и отчет о движении денежных средств

(1) Значение наличности и денежного потока

В "Стандартах бухгалтерского учета предприятия" дается следующее определение наличных средств: они относятся к наличным средствам на складе предприятия и депозитам, которые могут быть использованы для оплаты в любое время. Эквиваленты денежных средств относятся к инвестициям предприятия, которые имеют краткосрочный характер, высокую ликвидность, легко конвертируются в известную сумму денежных средств и имеют небольшой риск изменения стоимости (когда ниже упоминается “денежные средства”, если только эквиваленты денежных средств не упоминаются одновременно, включаются как денежные средства, так и их эквиваленты наличных денег).Денежные средства и денежный поток - это два разных понятия. Некоторые ученые полагают, что денежный поток - это процесс валютных поступлений и расходов, который объективно существует в хозяйственной деятельности предприятия и может динамично отражать экономическую деятельность предприятия и играть определенную роль в ее обеспечении и контроле. Я считаю, что денежный поток также можно назвать денежным потоком. При принятии инвестиционных решений предприятием это общий термин для различных притоков и оттоков денежных средств, которые могут или должны происходить из-за обращения капитала в течение расчетного периода инвестиционного проекта. Денежный поток является основной основой и важная информация для расчета показателей оценки инвестиционных решений по проектам. Это кровь предприятия, как и кровь человеческого организма. Только при нормальной циркуляции крови организм человека может оставаться здоровым. Если предприятие имеет достаточную защиту денежных потоков, бесперебойные каналы финансирования и достаточный поток денежных доходов в своей хозяйственной деятельности, то предприятие будет успешно развиваться; напротив, оно будет стагнировать или даже впадет в финансовый кризис[127].

2. Финансовые риски и их классификация

(1) Значение финансового риска

Финансовый риск предприятия относится к неопределенности его финансового положения из-за различных непредвиденных или контролируемых факторов в ходе различных видов финансовой деятельности, что повышает вероятность того, что предприятие понесет убытки. Однако в условиях рыночной экономики финансовые риски объективно существуют. Полностью устранить риски и их последствия нереально. Можно только

[127] Актуальные проблемы экономической теории и менеджмента. Ученые зап. Академии народного хозяйства при Правительстве РФ Факультет экономических и социальных наук. М.: Экон-Информ, 2003. -111 с.

контролировать и снижать финансовые риски предприятий в максимально возможной степени. Для этого необходимо понимать источник и характеристики рисков, правильно прогнозировать и измерять финансовые риски, осуществлять надлежащий контроль и профилактику, а также совершенствовать механизмы управления рисками для минимизации потерь и создания максимальных выгод для предприятий.

(2) Классификация финансовых рисков

Финансовая деятельность предприятия пронизывает весь процесс производства и эксплуатации, и риски могут возникать в связи с привлечением средств, краткосрочными и долгосрочными инвестициями и распределением прибыли. Таким образом, в зависимости от источника риска финансовые риски можно разделить следующим образом: финансовый риск, инвестиционный риск, риск движения денежных средств и валютный риск.

3）Проанализируйте показатели, связанные с движением денежных средств, с точки зрения источника и типа финансовых рисков[128].

Правильное понимание источников и типов финансовых рисков является необходимым условием для прогнозирования и оценки финансовых рисков. Большая часть текущего анализа движения денежных средств основана на анализе соответствующих показателей, составленных из данных отчета о движении денежных средств, за которыми следует анализ процентной доли в структуре всего отчета о движении денежных средств, основанный на соответствующих статьях непрерывных годовых отчетов, для прогнозирования тенденции изменений, это давние методы анализа, но также и наиболее убедительные методы, упоминаемые во многих книгах по финансовому менеджменту. Я буду использовать эти методы анализа денежных потоков для интерпретации финансовых рисков предприятия.

Короче говоря, денежный поток является одним из показателей производственного и операционного статуса предприятия. Денежный поток включает в себя все аспекты производственного и операционного процесса предприятия, а также эффективность использования ресурсов, уровень потребления и степень рентабельности предприятия. независимо от того, насколько прибыльным является предприятие, насколько велика сумма прибыли, его успех или неудача в конечном счете зависят от того, может ли прибыль быть конвертирована в наличные деньги, и от скорости, с которой она может быть конвертирована в наличные деньги. Чистая прибыль предприятия, гарантированная денежным потоком, - это реальный и располагаемый доход.

Следовательно, при управлении денежными потоками необходимо контролировать не только компании с хорошей прибылью, но и компании с низкой прибылью, которым необходимо усилить свой контроль. Хороший денежный поток управления может облегчить процесс ухудшение

[128] Аманжолова Б.А. Бюджетирование как система оперативного планирования и контроля. Новосибирск: СибУПК, 2004. -143 с.

финансового положения предприятия, затягивать процесс банкротства и банкротства, а также выиграть определенное количество времени и возможность для предприятий, чтобы отрегулировать ее структура продукта и изменение его направления бизнеса, так что предприятие сможет выбраться из кормушки и двигаться в сторону светлых.

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РОЛЬ ОТЧЕТА О ДВИЖЕНИИ ДЕНЕЖНЫХ СРЕДСТВ И АНАЛИЗА ДВИЖЕНИЯ ДЕНЕЖНЫХ СРЕДСТВ

Аннотация: *Отчет о движении денежных средств - это один из трех основных отчетов финансовой отчетности. Он отражает увеличение или уменьшение наличности учреждения (включая банковские депозиты) в течение определенного периода времени (обычно ежемесячно или ежеквартально).Отчет о движении денежных средств был составлен главным образом для того, чтобы отразить влияние каждой статьи баланса на движение денежных средств, и в соответствии со своим назначением он делится на три категории деятельности: операционная, инвестиционная и финансовая. Отчет о движении денежных средств можно использовать для анализа того, достаточно ли у организации наличных средств для покрытия расходов в краткосрочной перспективе.*

В прошлом в корпоративных операциях особое внимание уделялось двум основным отчетам - балансовому отчету и отчету о прибылях и убытках. С расширением и усложнением корпоративных операций спрос на финансовую информацию растет день ото дня, и прерывание многих корпоративных операций связано с оборачиваемостью средств. Постепенно денежный поток, который сообщает движение корпоративных средств также привлекло внимание многих бизнес-операторов и является важной финансовой отчетностью.

Ключевые слова: *Отчет о движении денежных средств; бухгалтерский баланс*

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THE ROLE OF THE CASH FLOW STATEMENT AND CASH FLOW ANALYSIS

Summary: *The cash flow statement is one of the three main financial statements. It reflects the increase or decrease in an institution's cash (including bank deposits) over a period of time (usually monthly or quarterly).The statement of cash flows has been prepared primarily to reflect the impact of each balance sheet item on cash flows, and according to its purpose, it is divided into three*

categories of activities: operational, investment and financial. The cash flow statement can be used to analyze whether, does the organization have enough cash to cover expenses in the short term?

In the past, corporate operations have focused on two main statements - the balance sheet and the income statement. With the expansion and complexity of corporate operations, the demand for financial information is growing day by day, and the interruption of many corporate operations is related to the turnover of funds. Gradually, the cash flow that informs the movement of corporate funds has also attracted the attention of many business operators and is an important financial statement.

Keywords: *Cash flow statement; balance sheet*

1. Основная роль отчета о движении денежных средств

(1) Отчет о движении денежных средств может объяснить причины притока и оттока денежных средств предприятия за определенный период времени. Например, предприятие занимает в банке 2 миллиона юаней в текущем периоде и выплачивает банковские проценты в размере 50 000 юаней. Денежный поток, генерируемый финансовой деятельностью, в отчете о движении денежных средств отражает кредит в размере 2 миллионов юаней и выплату процентов в размере 50 000 юаней соответственно. Эта информация не содержится в бухгалтерском балансе и отчете о прибылях и убытках[129].

(2) Отчет о движении денежных средств может объяснить платежеспособность предприятия и его способность выплачивать дивиденды. При обычных обстоятельствах читатели отчетов уделяют больше внимания состоянию прибыли предприятия и часто используют сумму полученной прибыли в качестве показателя. Сумма прибыли предприятия в определенной степени указывает на то, что предприятие обладает определенной платежеспособностью наличными. Однако прибыль, полученная предприятием за определенный период времени, не отражает истинного уровня обслуживания долга или платежеспособности предприятия.

(3) Отчет о движении денежных средств позволяет проанализировать способность компании получать денежные средства в будущем. Об этом можно узнать из дебиторской задолженности, прочей дебиторской задолженности, денежных средств, полученных в результате инвестиций, и т.д.

(4) Отчет о движении денежных средств позволяет проанализировать влияние деятельности по управлению корпоративными инвестициями и финансами на операционные результаты и финансовые условия. Отчет о движении денежных средств предоставляет динамичную финансовую информацию о притоке и оттоке денежных средств за определенный период времени, указывая на то, что компания получает денежные средства от

[129] Аленичев В.В. Финансовый контроль. Аудит. М.: ЮКИС, 1995. -159 с.

операционной деятельности, инвестиционной и финансовой деятельности в течение отчетного периода, а также на то, как используются денежные средства, полученные компанией. Это может объяснить причины изменений в активах отчет о движении денежных средств является связующим звеном между непрерывным балансом и отчетом о прибыли.

(5) Отчет о движении денежных средств может содержать информацию об инвестиционной и финансовой деятельности, которая не связана с наличными деньгами. В дополнение к отражению инвестиционной и финансовой деятельности предприятия, связанной с денежными средствами, отчет о движении денежных средств также предоставляет информацию об инвестиционной и финансовой деятельности, которая не связана с получением наличных денежных средств в виде векселей, чтобы пользователи бухгалтерской отчетности могли полностью понять и проанализировать инвестиционную и финансовую деятельность предприятия.

2. Анализ отчета о движении денежных средств и финансового положения компании

Анализ движения денежных средств был разработан после появления отчета о движении денежных средств, и его методическая система несовершенна, а ее последовательность недостаточна. Анализ движения денежных средств основывается не только на отчете о движении денежных средств, но и объединяет бухгалтерский баланс и отчет о прибылях и убытках. "Стандарт бухгалтерского учета предприятия № 31 - Отчет о движении денежных средств", выпущенный моей страной, требует от предприятий составлять отчеты о движении денежных средств в соответствии с прямым методом и предоставлять информацию о приведении чистой прибыли в соответствие с денежным потоком от операционной деятельности в соответствии с косвенным методом в прилагаемой таблице, которая полезна для выявления формирования прибыли. денежный поток и его причины за определенный период времени, а также анализ качества чистой прибыли компании с точки зрения денежного потока оказывают положительное влияние.

Анализ структуры денежных потоков[130] - это сравнение и анализ различных статей отчета о движении денежных средств за один и тот же период с целью выявления относительной значимости различных данных в притоке денежных средств предприятий. Формула расчета такова:

Коэффициент структуры денежного потока = единовременный приток (отток) денежных средств / общий приток денежных средств

Анализ качества прибыли — это метод анализа, который выявляет способность предприятия поддерживать существующий операционный уровень и создавать прибыльность в будущем на основе соотношения между

[130] Аленичев В.В. Финансовый контроль. Аудит. М.: ЮКИС, 1995. -159 с.

чистым денежным потоком от операционной деятельности, чистой прибылью, капитальными затратами и т.д.

3. Анализ финансирования и платежеспособности

Анализ финансирования и платежеспособности осуществляется путем сравнения соответствующих статей отчета о движении денежных средств, чтобы отразить финансовые возможности предприятия на финансовом рынке и его способность погасить долги или расходы. Анализ корпоративного финансирования и платежеспособности в основном включает в себя следующие показатели:

Коэффициент внешнего финансирования

Коэффициент внешнего финансирования[131] = (чистое увеличение (уменьшение) операционной кредиторской задолженности + приток финансовых средств)/общий приток денежных средств

Этот коэффициент отражает способность предприятия привлекать средства на финансовом рынке или степень зависимости развития его бизнеса от внешних источников финансирования. Чем больше этот коэффициент, тем выше финансовые возможности предприятия.

Коэффициент обязательных денежных выплат

Коэффициент обязательных денежных выплат = общий приток денежных средств / (операционный отток денежных средств + погашение основной суммы долга и выплата процентов наличными)

Этот коэффициент отражает, достаточно ли у компании денежных средств для погашения долгов, оплаты операционных расходов и т.д. В процессе непрерывной деятельности приток денежных средств компании должен, по крайней мере, соответствовать обязательному назначению платежа, то есть покрывать расходы на операционную деятельность и погашать задолженность.

Соотношение погашения основной суммы долга и процентов к погашению причитающейся задолженности

Коэффициент погашения основной суммы долга и процентов по нему = чистый денежный поток от операционной деятельности/ (основная сумма долга, подлежащая погашению в текущем периоде + денежные процентные расходы)

Этот коэффициент используется для измерения степени, в которой основная сумма долга и проценты по нему могут быть выплачены за счет денежных средств, полученных в результате операционной деятельности. Чем больше коэффициент, тем сильнее способность предприятия погашать задолженности. Если коэффициент меньше 1, то денежные средства, полученные от предпринимательской деятельности предприятия недостаточно для погашения основного долга и процентов по задолженности.

[131] Аленичев В.В. Финансовый контроль. Аудит. М.: ЮКИС, 1995. -159 с.

Предприятие должно мобилизовать средства или продавать имущество, чтобы погасить долги.

Коэффициент обслуживания денежного долга

Коэффициент обслуживания денежного долга = чистый операционный денежный поток/общая сумма долгосрочного долга.

Этот коэффициент отражает способность компании погашать долгосрочные долги в соответствии с денежными средствами, получаемыми в результате текущей операционной деятельности. Хотя предприятие может использовать денежные средства, полученные в результате инвестиционной или финансовой деятельности, для погашения своих долгов, денежные средства, полученные в результате операционной деятельности, должны быть основным источником долгосрочных денежных средств для предприятия.

Ставка выплаты дивидендов наличными или норма распределения прибыли

Ставка выплаты дивидендов наличными = дивиденды наличными или распределенная прибыль/чистый операционный денежный поток.

Этот коэффициент отражает взаимосвязь между чистым денежным потоком от операционной деятельности за текущий период и денежными дивидендами (или распределением прибыли среди инвесторов). Чем ниже этот коэффициент, тем выше способность компании выплачивать денежные дивиденды. Традиционная ставка выплаты дивидендов (дивиденды к выплате /чистая прибыль, при условии, что привилегированные акции не учитываются) отражает взаимосвязь между выплатой дивидендов и чистой прибылью, в то время как ставка выплаты дивидендов, отраженная в чистом денежном потоке, может отражать источник денежных средств для выплаты дивидендов и его надежность.

Все вышесказанное основано на отчете о движении денежных средств и использует метод коэффициентов для анализа финансового положения предприятия. Чтобы полностью понять состояние движения денежных средств и другую информацию предприятия за определенный период времени, отчет о движении денежных средств также может быть связан с информацией, представленной в других финансовых отчетах, а финансовый коэффициент предприятия может быть сравнен и проанализирован со средним или стандартным коэффициентом за тот же период времени. отрасль или исторический уровень предприятия, чтобы предоставить правдивую и надежную финансовую информацию для принятия финансовых решений.

4. Анализ финансовых рисков предприятия на основе отчета о движении денежных средств

Коэффициент денежной наличности использует отношение остатка денежных средств предприятия на конец периода к текущим обязательствам предприятия для определения риска обслуживания долга предприятия. Из-за короткого срока действия текущих обязательств (не более одного года) вскоре возникнет необходимость в погашении наличных средств. Если у компании

нет определенного объема резервов наличности, она будет подвержена проблемам при погашении долга.

Коэффициент чистых денежных средств от операционной деятельности используется для сравнения чистого денежного потока, генерируемого операционной деятельностью предприятия, с текущими обязательствами предприятия. Зачем использовать чистый денежный поток от операционной деятельности? Прежде всего, при нормальных условиях производства и эксплуатации денежный доход, полученный в текущем периоде, должен сначала покрыть расходы на производственную и операционную деятельность, а затем могут быть покрыты расходы на погашение долга. Во-вторых, хозяйственная деятельность предприятия является основной деятельностью предприятия и основным источником получения собственных средств. Следует сказать, что это также самый безопасный и стандартизированный способ получения денежного потока. Отношение чистого денежного потока от операционной деятельности к текущим обязательствам используется для измерения риск обслуживания задолженности предприятия, который может отражать состояние платежеспособности предприятия с одной стороны.

Отношение чистых операционных денежных средств ко всем обязательствам используется для оценки способности предприятия погасить все обязательства за счет годового чистого денежного потока от операционной деятельности. Этот показатель может всесторонне отражать уровень риска обслуживания долга предприятия.

Риск потери платежеспособности

Платежеспособность относится к тому факту, что помимо использования наличных денег для погашения долгов, предприятие использует наличные деньги для оплаты других расходов предприятия. Если предприятие не имеет платежеспособности, не выплачивает заработную плату сотрудникам, не закупает товары и не выплачивает дивиденды в обычном режиме, оно не будет выплачивать дивиденды в обычном режиме. они не только вызывают нестабильность в рабочей силе, нарушения в производстве и эксплуатации, но и влияют на доверие инвесторов к инвестициям предприятия, формируя платежный риск.

Используя соответствующие показатели отчета о движении денежных средств, мы можем получить информацию на этот счет.

Чистый денежный поток от операционной деятельности в расчете на обыкновенную акцию и чистый денежный поток от операций по выплате денежных дивидендов. Отношение чистого денежного потока от операционной деятельности к количеству обыкновенных акций в обращении используется для отражения способности компании выплачивать дивиденды и капитальные затраты, а отношение чистого денежного потока от операционной деятельности к денежным дивидендам используется для отражения способности компании использовать чистый денежный поток от операционной деятельности. выплачивать денежные дивиденды в течение

года. Чем больше коэффициент, тем выше платежеспособность компании, и наоборот, будет формироваться риск выплаты дивидендов.

Всесторонняя платежеспособность. Используйте денежный доход от операционной деятельности в текущем периоде плюс денежный доход от инвестиционной деятельности за вычетом денежных расходов на погашение долга, а затем вычтите различные расходы, связанные с операционной деятельностью. Если результат больше 0, это означает, что денежный доход от текущей операционной деятельности предприятия и денежные средства, полученные в результате инвестиционной деятельности, равны нулю. доходы от инвестиционной деятельности достаточны для погашения текущего долга и ежедневных расходов на операционную деятельность, а часть остатка может быть использована для инвестиций и распределения дивидендов, в противном случае они не могут быть использованы для инвестиционной деятельности и распределения дивидендов. Если такая ситуация сохранится и ее нельзя будет изменить, предприятие столкнется с платежными рисками.

Платежеспособность предприятия в основном зависит от полученных денежных средств. Прямым средством, с помощью которого предприятие выплачивает дивиденды, также являются денежные средства. Из отчета о движении денежных средств мы можем не только судить о текущей денежной ситуации предприятия, но и проанализировать способность предприятия генерировать будущие денежные потоки. Просматривая бухгалтерскую отчетность за несколько последовательных периодов, сравнивая соответствующие статьи в каждом периоде, анализируя изменения в их увеличении или уменьшении и прогнозируя тенденции их развития, можно оценить возможные риски для будущих денежных потоков предприятия.

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АНАЛИЗ ОТЧЕТА О ДВИЖЕНИИ ДЕНЕЖНЫХ СРЕДСТВ

Аннотация: *Отчет о движении денежных средств - это динамичный отчет, который отражает информацию о поступлении и оттоке денежных средств и их эквивалентов в течение определенного отчетного периода предприятия. Научный анализ и использование отчетов о движении денежных средств является одним из необходимых условий для принятия правильных решений пользователями отчетов.*

Ключевые слова: *Финансовый менеджмент; отчет о движении денежных средств; анализ*

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CASH FLOW STATEMENT ANALYSIS

Summary*:A cash flow statement is a dynamic report that reflects information about the inflow and outflow of cash and cash equivalents during a certain accounting period of an enterprise.The scientific analysis and use of cash flow reports is one of the necessary conditions for users of the reports to make the right decisions.*

Keywords:*Financial management; cash flow statement; analysis*

Денежный поток[132] - это фундаментальная цель бизнеса. Предприятие может владеть всеми видами активов, но цель владения этими активами всегда может быть связана с целью получения денежного потока, то есть с получением большего количества денежных средств, чем было инвестировано. Отчет о движении денежных средств - это отчет, который отражает поступление и отток денежных средств и их эквивалентов в течение определенного отчетного периода предприятия.

С точки зрения принципа составления, отчет о движении денежных средств составляется в соответствии с принципом системы сбора и осуществления платежей, а информация о прибыли по системе начисления

[132] Аманжолова Б.А. Бюджетирование как система оперативного планирования и контроля. Новосибирск: СибУПК, 2004. -143 с.

корректируется в соответствии с информацией о движении денежных средств по системе сбора и осуществления платежей, чтобы облегчить пользователям информации понимание качества отчета. чистая прибыль компании. С точки зрения содержания отчет о движении денежных средств делится на три части: операционная деятельность, инвестиционная деятельность и финансовая деятельность. Отчет о движении денежных средств отражает приток и отток денежных средств в результате хозяйственной деятельности компании с разных точек зрения, восполняя недостаток информации, содержащейся в бухгалтерском балансе и отчете о прибылях и убытках. С помощью отчета о движении денежных средств пользователи отчетов могут понять факторы, влияющие на движение денежных средств, оценить платежеспособность компании, ее платежеспособность и оборачиваемость, спрогнозировать будущий денежный поток компании и обеспечить надежную основу для принятия решений. Основными функциями отчета о движении денежных средств являются: предоставление фактических данных о текущем движении денежных средств, предоставление информации для оценки качества текущего дохода, помощь в оценке финансовой гибкости предприятия, помощь в оценке ликвидности предприятия и прогнозирование будущего движения денежных средств предприятия. предприятие.

1. Проанализируйте рентабельность инвестиций предприятий

(1) Методы анализа, не учитывающие скидки

Как и метод периода окупаемости, этот метод относится к времени, которое требуется для того, чтобы приток денежных средств, вызванный инвестициями, достиг той же суммы, что и инвестиции. Он представляет собой количество лет, необходимое для возврата инвестиций. Чем короче период окупаемости, тем лучше план. Формула расчета такова: первоначальная сумма инвестиций÷ годовой чистый приток денежных средств. Этот показатель используется для определения ликвидности программы, а не ее некоммерческого характера[133].

(2) Аналитический метод дисконтирования

В основном существуют метод чистой приведенной стоимости, метод индекса приведенной стоимости, метод с учетом нормы прибыли и другие методы. Среди них чистая приведенная стоимость представляет собой разницу между текущей стоимостью будущих поступлений денежных средств и текущей стоимостью их оттока. Метод чистой приведенной стоимости заключается в использовании величины чистой приведенной стоимости в качестве метода оценки осуществимости плана. Положительная чистая приведенная стоимость указывает на то, что норма прибыли от инвестиций превышает заранее установленную ставку дисконтирования. Индекс приведенной стоимости - это отношение приведенной стоимости будущих поступлений денежных средств к приведенной стоимости их оттока. Значение

[133] Аманжолова Б.А. Бюджетирование как система оперативного планирования и контроля. Новосибирск: СибУПК, 2004. -143 с.

индекса больше 1, что также указывает на то, что норма прибыли превышает заранее установленную ставку дисконтирования. Метод включенной нормы доходности - это метод оценки преимуществ плана, основанный на включенной норме доходности самого плана. Он заключается в том, чтобы сделать чистую приведенную стоимость инвестиционного плана ставкой дисконтирования, равной нулю. Чем больше показатель, тем лучше план.

2. Проанализируйте долгосрочную и краткосрочную платежеспособность предприятия

Анализ краткосрочной платежеспособности предприятия в основном зависит от соотношения чистого операционного денежного потока компании к текущим обязательствам, а именно: чистый операционный денежный поток÷ текущие обязательства. Чем выше коэффициент, тем выше способность предприятия погасить задолженность; анализ долгосрочной платежеспособности предприятия в основном зависит от соотношения чистого операционного денежного потока компании к общей сумме обязательств, а именно: чистый операционный денежный поток÷ общая сумма обязательств. Чем выше этот коэффициент, тем выше способность компании погасить свои долги.

3. Проанализируйте способность предприятий выплачивать фиксированные кассовые сборы

Коэффициент фиксированной платежеспособности наличными = (приток денежных средств от операционной деятельности - денежные средства для покупки товаров и оплаты трудовых услуг - денежные средства для уплаты различных налогов)÷ Фиксированные расходы на оплату наличными. Если этот коэффициент меньше 1, это означает, что оборотные средства сокращаются день ото дня, и предприятие столкнется с экзистенциальным кризисом. Возможными проблемами являются: сокращение объема операций и снижение доходов; высокое соотношение активов и пассивов и чрезмерные проценты; неконтролируемые инвестиции, приводящие к увеличению постоянных расходов; слишком много свободного персонала на предприятии и связанные с этим расходы слишком велики.

4. Анализ денежного обеспечения чистой прибыли

Золотое содержание чистой прибыли = чистый денежный поток от операционной деятельности + денежные средства, полученные от инвестиционного дохода-финансовых расходов + излишек денежных средств от продажи долгосрочных активов + остаток денежных средств, на который влияют изменения обменного курса. Рассчитав соотношение между содержанием золота и чистой прибылью, можно более точно отразить денежную поддержку, лежащую в основе балансового денежного потока компании, и точно оценить достоверность прибыли.

Можно видеть, что только уделяя больше внимания анализу денежных потоков, предприятие может точно оценить операционные показатели проекта.

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РАЗВИТИЕ НОВЫХ ЭКСПОРТНЫХ МАРШРУТОВ ПАО «ГАЗПРОМ» КАК ЭЛЕМЕНТ АНТИКРИЗИСНОЙ СТРАТЕГИИ

Аннотация: *В статье исследуется роль новых экспортных маршрутов ПАО «Газпром» как ключевого элемента антикризисной стратегии компании в условиях трансформации глобальных энергетических рынков. Анализируются основные направления диверсификации поставок, включая проекты в Азиатско-Тихоокеанском регионе («Сила Сибири», «Сахалин-2»), развитие СПГ-мощностей и альтернативных транспортных коридоров. Особое внимание уделяется влиянию новых маршрутов на устойчивость бизнес-модели компании, а также системным вызовам, связанным с высокими капитальными затратами, политическими рисками и технологическими сложностями. В заключении обосновывается необходимость дальнейшей оптимизации экспортной политики с учетом меняющейся рыночной конъюнктуры и перспектив энергоперехода.*

Ключевые слова: *Газпром, Экспортные Маршруты, Антикризисная Стратегия, Диверсификация Поставок, Энергетическая Безопасность*

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DEVELOPMENT OF GAZPROM'S NEW EXPORT ROUTES AS AN ELEMENT OF ITS ANTI-CRISIS STRATEGY

Abstract: *The article examines the role of Gazprom's new export routes as a key element of the company's anti-crisis strategy under the conditions of global energy markets transformation. The article analyzes the main directions of supply diversification, including projects in the Asia-Pacific region (Power of Siberia, Sakhalin-2), development of LNG capacities and alternative transport corridors. Special attention is paid to the impact of new routes on the sustainability of the company's business model, as well as systemic challenges related to high capital expenditures, political risks and technological complexities. The conclusion substantiates the need for further optimization of the export policy taking into account the changing market conditions and the prospects of energy transition.*

Keywords: *Gazprom, Export Routes, Anti-Crisis Strategy, Supply Diversification, Energy Security*

Введение

ПАО «Газпром» занимает системообразующее положение в российской экономике, обеспечивая значительную долю валютных поступлений и формируя устойчивость энергетического сектора страны. В условиях беспрецедентных геополитических изменений последних лет, сопровождающихся введением ограничительных мер в отношении российских энергоносителей, традиционные маршруты экспорта природного газа подверглись кардинальной трансформации. Сокращение поставок на европейский рынок, долгое время являвшийся основным направлением экспортных операций компании, поставило перед руководством «Газпрома» стратегическую задачу по поиску альтернативных каналов сбыта. Данное обстоятельство определяет научную и практическую актуальность исследования новых экспортных маршрутов как ключевого элемента антикризисного управления.

Актуальность темы обусловлена комплексом взаимосвязанных факторов. Во-первых, энергетический сектор остается критически важным для обеспечения экономической безопасности России, а газовый экспорт традиционно формирует существенную часть доходов федерального бюджета. Во-вторых, изменение конфигурации мировых энергетических рынков требует принципиально новых подходов к организации экспортных операций. В-третьих, успешная реализация стратегии диверсификации поставок позволит не только компенсировать потери на традиционных рынках, но и создать новые конкурентные преимущества компании в долгосрочной перспективе.

Целью настоящего исследования является комплексный анализ роли новых экспортных маршрутов в антикризисной стратегии ПАО «Газпром». Особое внимание уделяется оценке эффективности принимаемых мер по переориентации товарных потоков и их влиянию на устойчивость бизнес-модели компании. В рамках достижения поставленной цели предполагается решить следующие исследовательские задачи: систематизировать ключевые направления развития новых маршрутов экспорта, проанализировать их вклад в обеспечение финансовой стабильности компании, выявить стратегические преимущества и потенциальные риски, связанные с реализацией новых проектов.

Новые экспортные маршруты «Газпрома»: направления и проекты

Трансформация экспортной стратегии ПАО «Газпром» в условиях геополитических изменений приобрела системный характер, охватывающий все ключевые аспекты международной деятельности компании. Географическая диверсификация поставок сформировала новую конфигурацию товарных потоков, где приоритетное значение приобрели рынки Азиатско-Тихоокеанского региона. Китай, как стратегический партнер, получает растущие объемы газа по магистрали «Сила Сибири», тогда как перспективы увеличения поставок связаны с реализацией проекта «Сила

Сибири-2». Одновременно компания активизирует работу по расширению присутствия на рынках Индии, где рост потребления энергоресурсов создает благоприятные условия для долгосрочных контрактов.[1] Освоение рынков Ближнего Востока и Африки, несмотря на имеющиеся регуляторные сложности, позволяет диверсифицировать риски и закрепиться в перспективных регионах с растущим спросом.

Инфраструктурная трансформация стала важнейшим компонентом новой экспортной стратегии. Помимо развития трубопроводного транспорта, особое внимание уделяется проектам в области сжиженного природного газа. Строительство «Балтийского СПГ» и модернизация «Сахалина-2» направлены на создание гибкой системы поставок, независимой от транзитных ограничений. Альтернативные маршруты через Турцию и страны Центральной Азии формируют дополнительную устойчивость экспортной системы, обеспечивая возможность маневра товарными потоками в зависимости от рыночной конъюнктуры. При этом каждый из новых проектов требует решения сложных технических и финансовых задач, связанных с особенностями местных рынков и условиями транспортировки. Логистическая адаптация компании включает инновационные подходы к организации поставок. Активное использование Северного морского пути, несмотря на сложные климатические условия, позволяет оптимизировать доставку энергоносителей в азиатском направлении. Развитие сотрудничества с «дружественными» транзитными странами создает основу для формирования альтернативных транспортных коридоров, снижающих зависимость от нестабильных регионов. Технологическая модернизация флота и терминальной инфраструктуры становится необходимым условием для обеспечения надежности новых маршрутов в условиях ужесточающихся экологических стандартов и требований к энергоэффективности.

Реализация новых экспортных проектов сопровождается комплексными изменениями в системе корпоративного управления. Внедрение современных систем мониторинга и анализа позволяет оперативно адаптировать логистические схемы к изменяющимся рыночным условиям. Финансовая модель компании трансформируется с учетом необходимости балансирования между крупными капитальными вложениями в новые проекты и поддержанием текущей доходности.[2] Особое значение приобретает гармонизация технических стандартов с требованиями стран-импортеров, что требует значительных усилий по адаптации производственных процессов и системы контроля качества.

Влияние новых маршрутов на устойчивость «Газпрома»

Формирование новых экспортных маршрутов оказало комплексное воздействие на устойчивость бизнес-модели ПАО «Газпром», создав качественно иную парадигму функционирования компании на глобальных энергетических рынках. Снижение зависимости от традиционных европейских направлений экспорта позволило существенно уменьшить уязвимость компании к геополитическим колебаниям и санкционному

давлению. Переориентация товарных потоков на восточные и южные рынки, несмотря на сопутствующие издержки, сформировала более сбалансированную структуру сбыта, где сокращение поставок в Европу компенсируется ростом объемов в Азиатско-Тихоокеанском регионе и других перспективных направлениях.

Финансовая устойчивость компании укрепляется за счет диверсификации валютных расчетов и платежных механизмов. Расширение использования национальных валют в контрактах с азиатскими партнерами снижает зависимость от долларовой системы и минимизирует риски, связанные с ограничениями в международных расчетах. Развитие альтернативных финансовых инструментов, включая механизмы взаиморасчетов через третьи страны, создает дополнительную защиту от возможных disruptions в глобальной финансовой архитектуре.[3] При этом сохраняются вызовы, связанные с ликвидностью новых платежных схем и необходимостью адаптации системы риск-менеджмента. Укрепление переговорных позиций «Газпрома» с контрагентами стало прямым следствием расширения географического присутствия компании. Возможность маневра товарными потоками между различными регионами повышает гибкость коммерческой политики и усиливает позиции компании при заключении долгосрочных контрактов. Диверсификация клиентской базы снижает риски, связанные с зависимостью от ограниченного круга покупателей, создавая основу для более сбалансированного ценообразования. Особое значение приобретает способность компании сочетать поставки по трубопроводам с СПГ-проектами, что позволяет оптимизировать логистику в зависимости от рыночной конъюнктуры.

Технологические и инфраструктурные вызовы, сопровождающие развитие новых маршрутов, требуют существенной трансформации производственной и логистической системы компании. Освоение новых месторождений в восточных регионах России, строительство современных СПГ-заводов и развитие транспортной инфраструктуры сопряжены с необходимостью крупных капитальных вложений и внедрения передовых технических решений. Особую сложность представляет адаптация к различным стандартам и требованиям новых рынков, что требует модернизации системы контроля качества и технологических процессов. Формирование компетенций в области криогенных технологий и морской транспортировки СПГ становится стратегическим приоритетом для обеспечения конкурентоспособности на глобальном рынке.

Проблемы и риски реализации новых маршрутов

Развитие новых экспортных направлений ПАО «Газпром» сопровождается комплексом системных вызовов, требующих взвешенного управления рисками на стратегическом уровне. Капиталоемкость инфраструктурных проектов формирует значительную нагрузку на финансовую модель компании, особенно в условиях ограниченного доступа к международным источникам финансирования. Строительство магистральных

газопроводов, таких как «Сила Сибири-2», создание СПГ-терминалов и развитие транспортной логистики требуют многомиллиардных инвестиций с длительными сроками окупаемости, что создает напряженность в среднесрочной перспективе и требует тщательного планирования денежных потоков.[4]

Политические риски в новых регионах присутствия проявляются в нестабильности регуляторных режимов и потенциальной изменчивости торгово-экономической политики. Многие развивающиеся рынки Азии и Африки характеризуются сложными административными процедурами, непрозрачностью законодательства и высоким уровнем коррупции. Особую озабоченность вызывает зависимость от политической конъюнктуры в странах-партнерах, где смена власти или изменение внешнеполитического курса может привести к пересмотру действующих соглашений. Российская компания сталкивается с необходимостью выстраивания сложных систем политического риск-менеджмента и диверсификации политических рисков.

Конкурентное давление на новых рынках существенно отличается от условий традиционных направлений экспорта. Укоренившиеся глобальные игроки, такие как американские и катарские поставщики СПГ, обладают значительными преимуществами, включая развитую клиентскую базу, гибкие ценовые механизмы и поддержку со стороны своих правительств. Азиатские рынки, являющиеся приоритетными для российской диверсификации, характеризуются высокой насыщенностью предложения и специфическими требованиями к качеству продукции. Российскому экспортеру приходится конкурировать не только по ценовым параметрам, но и по таким критериям как надежность поставок, гибкость контрактных условий и уровень сервисного обслуживания. Технические сложности реализации новых маршрутов требуют существенной модернизации производственных и логистических компетенций компании.[5] Транспортировка сжиженного природного газа сопряжена с необходимостью соблюдения строгих экологических стандартов и требований безопасности. Особые климатические условия работы на Северном морском пути предъявляют повышенные требования к надежности оборудования и квалификации персонала. Развитие терминальной инфраструктуры в новых регионах сталкивается с проблемами логистического характера, включая ограниченную пропускную способность портов и неразвитость сопутствующей инфраструктуры. Эти факторы требуют от компании не только значительных капиталовложений, но и пересмотра подходов к управлению цепочками поставок и техническому обслуживанию активов.

Заключение

Проведенное исследование демонстрирует, что развитие новых экспортных маршрутов стало ключевым элементом антикризисной стратегии ПАО «Газпром» в условиях кардинальной трансформации глобальных энергетических рынков. Реализация проектов в Азиатско-Тихоокеанском регионе и других перспективных направлениях позволила компании не

только компенсировать сокращение поставок в Европу, но и сформировать качественно новую модель экспортной деятельности, основанную на принципах диверсификации и устойчивости. При этом эффективность данной стратегии напрямую зависит от способности компании преодолевать существенные финансовые, технологические и геополитические вызовы, сопутствующие освоению новых рынков.

Для дальнейшей оптимизации экспортной политики «Газпрому» целесообразно сосредоточиться на развитии гибких механизмов реагирования на изменения рыночной конъюнктуры, включая совершенствование системы управления рисками и углубление сотрудничества с надежными стратегическими партнерами. Особое значение приобретает гармонизация технических стандартов с требованиями новых рынков и ускорение внедрения инновационных решений в области транспортировки и сжижения газа. Перспективные направления дальнейших исследований включают анализ влияния глобального энергоперехода на конфигурацию экспортных маршрутов, а также изучение возможностей интеграции низкоуглеродных технологий в стратегию развития компании. Особого внимания заслуживает исследование оптимального баланса между масштабными инфраструктурными проектами и необходимостью поддержания финансовой устойчивости в условиях высокой неопределенности внешней среды.

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ОСОБЕННОСТИ РЕГЕНЕРАЦИИ ПОВРЕЖДЕННОГО ПЕРИФЕРИЧЕСКОГО НЕРВА У ОБЛУЧЕННЫХ КРОЛИКОВ

Резюме: *В статье изучены особенности регенерации поврежденного периферического нерва у облученных кроликов. А также процесс реинрегенерации поврежденного периферического нерва у облученных животных различных возрастных групп.*

Ключевые слова: *кролик, периферический нерв, облучение, регенерация, облученный кролик, поврежденный нерв.*

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FEATURES OF REGENERATION OF DAMAGED PERIPHERAL NERVE IN IRRADIATED RABBITS

Abstract: *The article examines the features of regeneration of damaged peripheral nerve in irradiated rabbits. As well as the process of rheological regeneration of the damaged peripheral nerve in irradiated animals of various age groups.*

Keywords: *rabbit, peripheral nerve, irradiation, regeneration, irradiated rabbit, damaged nerve.*

Ввдение. В предыдущих наших исследованиях были изложены данные, полученные при изучении реинрегенеративных процессов в поврежденном периферическом нерве у животных с острой лучевой болезнью [2,3]. В опытах на собаках и кроликах нейрогистологическими методами были изучены характер и темпы восстановления механически поврежденного седалищного нерва, а также сроки возникновения трофических язв при травме нерва сразу же после однократного общего облучения животных [1,4]. Известно, что темпы репаративной регенерации тканей зависят от многих причин и, в частности, от возраста животного [5].

Цель исследования. В этой связи нами были проведены эксперименты с целью изучения процессов де- и регенерации поврежденного периферического нерва у облученных животных различных возрастных групп.

Материалы и методы исследования. Для опытов было использовано 137 кроликов двухнедельного и четырехнедельного возраста, часть из

которых (85 животных) была облучена однократно тотально на аппарате РУМ-3 дозой 150 р.; остальные (52 кролика) служили контролем. Животных забивали через: 3-7-10-14-21-30-45 и 60 дней после гладкой перерезки правого седалищного нерва. Для гистологического исследования брали: центральный конец поврежденного нерва, рубец, периферический отрезок, икроножную мышцу. Материал импрегнировали серебром по Бильшовскому- Гросс.

Результаты исследования. Проведенное исследование показало, что процессы реи регенерации поврежденного нервного ствола у облученных кроликов двухнедельного возраста несколько отличаются от наблюдающихся в контроле. Это отличие заключается в задержке валлеровского перерождения и рассасывания остатков распавшихся аксонов. Замедлены также и процессы регенерации. Это замедление процессов реи регенерации у облученных кроликов особенно наглядно проявляется в первые две недели после невротомии. Процессы реи регенерации поврежденного нервного ствола у облученных кроликов четырехнедельного возраста явно замедляются по сравнению с контролем. Особенно наглядно замедление указанных процессов обнаруживается в первые 30 дней после невротомии.

В изучении отдаленных последствий влияния внешнего облучения на состояние органов и систем определенное место должны занять исследования по выяснению характера и темпов репаративной регенерации. Эти вопросы еще не нашли достаточного освещения в литературе. Мы в экспериментах на кроликах изучили особенности течения де- и регенерации поврежденного нерва у животных, ранее перенесших лучевую болезнь. В опытах использовано 158 взрослых кроликов; 129 животных было облучено однократно тотально дозой в 400 рентген, 29 кроликов служили контролем и облучению не подвергались Из 129 облученных кроликов в различные сроки после действия ионизирующей радиации погибло 60 животных. Непосредственно в опыты вошло 69 кроликов, которым через з месяца (38 кроликов) и 6 месяцев (31 кролик) после облучения производилась гладкая перерезка правого седалищного нерва. Аналогичная операция проделана и контрольным (не облученным кроликам). В сроки: через 5- 8—12-18-25-40 и 60 дней после невротомии животные забивались и у них забирался материал для гистологического исследования, который обрабатывался по Грос-Бильшовскому (периферические нервы) и Нисслю (спинной мозг, межпозвоночные узлы). Следует отметить, что к моменту производства невротомии, ранее облученные кролики внешне ничем не отличались от здоровых (не облученных) животных; показатели периферической крови также не отличались от показателей крови контрольных кроликов.

Вывод. Морфологические исследования показали, что процесс валлеровского перерождения и реи нервация дистального отрезка нерва у ранее облученных кроликов замедлены в сравнении с контролем. Замедление указанных процессов наглядно выражено, как у животных, перенесших облучение за 3 месяца до невротомии, так и у тех кроликов, которые подвергались облучению за 6 месяцев до перерезки нерва. Проведенное

исследование позволило выявить ряд особенностей течения де- и регенеративных процессов поврежденного периферического нерва у облучённых кроликов различных возрастных групп, а также у ранее перенесших общее однократное облучение животных. Кроме того, эти исследования еще раз подтвердили представление о том, что периферическая нервная система не радиорезистентная, а весьма чувствительна к проникающему излучению.

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КОРПОРАТИВНАЯ СТРАТЕГИЯ И УПРАВЛЕНИЕ РИСКАМИ В ФИНАНСОВОМ МЕНЕДЖМЕНТЕ

Аннотация: *В связи с непрерывным развитием рынка и усилением конкуренции компании сталкиваются со все более сложными задачами в области управления финансами. Чтобы эффективно решать эти задачи, компаниям необходимо внедрять стратегию и управление рисками в свои системы финансового менеджмента. В этой статье мы обсудим корпоративную стратегию и управление рисками в финансовом менеджменте и постараемся предоставить предприятиям соответствующие руководящие принципы и методы реализации стратегии.*

Ключевые слова: *Стратегия финансового управления; управление рисками*

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CORPORATE STRATEGY AND RISK MANAGEMENT IN FINANCIAL MANAGEMENT

Summary*: Due to the continuous development of the market and increased competition, companies are facing increasingly complex financial management challenges. To effectively address these challenges, companies need to implement strategy and risk management into their financial management systems.In this article, we will discuss corporate strategy and risk management in financial management and try to provide businesses with appropriate guidelines and methods for implementing the strategy.*

Keywords: *Financial management strategy; risk management*

1. Корпоративная стратегия и финансовый менеджмент

Корпоративная стратегия - это план действий, сформулированный предприятием для достижения долгосрочных целей и максимизации выгод. Финансовый менеджмент играет жизненно важную роль в корпоративной стратегии. Финансовый менеджмент поддерживает реализацию корпоративных стратегий, оптимизируя распределение ресурсов и принимая финансовые решения. Управление финансами должно быть тесно

интегрировано с корпоративной стратегией, чтобы обеспечить согласованность принятия финансовых решений и стратегических целей[134].

1.1 Распределение ресурсов

Успешная реализация корпоративных стратегий требует соответствующего распределения ресурсов. Финансовый менеджмент анализирует текущее финансовое положение и будущие операционные потребности предприятия и рационально организует распределение средств и других ресурсов для поддержки реализации стратегии предприятия. Рациональное распределение средств может помочь предприятиям повысить эффективность производства, повысить конкурентоспособность и максимизировать прибыль.

1.2 Решение о финансировании

Реализация корпоративных стратегий обычно требует значительной финансовой поддержки. Финансовый менеджмент играет ключевую роль в этом процессе. Финансовый менеджмент оценивает финансовые потребности предприятий, выбирает подходящие источники финансирования и разрабатывает разумные финансовые планы, гарантирующие, что предприятия смогут получить достаточные средства для поддержки реализации своих стратегических целей.

2. Управление рисками в финансовом менеджменте

Предприятия сталкиваются с различными рисками в процессе управления финансами, такими как рыночный риск, кредитный риск, риск ликвидности и т.д. Управление рисками является важной частью корпоративного финансового менеджмента, его целью является снижение влияния финансовых рисков на стратегические цели корпорации посредством разумных мер по выявлению, оценке и контролю рисков.[135]

2.1 Идентификация и оценка рисков

В процессе управления финансами компании должны активно выявлять и оценивать различные потенциальные риски. Идентификация рисков относится к выявлению факторов, которые могут оказать негативное влияние на финансовое положение и деловую деятельность предприятия. Оценка рисков - это количественный или качественный анализ выявленных рисков с целью определения их потенциального влияния на стратегические цели предприятия.

2.2 Меры по контролю рисков

Как только риск выявлен и оценен, предприятие должно принять соответствующие меры по контролю за рисками, чтобы уменьшить его влияние на финансовое положение и деловую деятельность предприятия. Меры по контролю рисков могут включать диверсификацию инвестиционных

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портфелей, разработку соответствующей финансовой политики и нормативных актов, а также приобретение соответствующей страховки. Благодаря этим мерам предприятия могут целенаправленно управлять рисками и контролировать их, а также повышать стабильность и устойчивое развитие финансового менеджмента.

3. Тематический анализ корпоративной стратегии и управления рисками в финансовом менеджменте

Чтобы лучше понять корпоративную стратегию и управление рисками в финансовом менеджменте, ниже приводится анализ некоторых типичных случаев.

3.1 Стратегия расширения рынка

Компания разработала стратегию расширения рынка и планирует открыть новые филиалы в стране и за рубежом.В процессе управления финансами предприятию необходимо учитывать план финансирования и распределения ресурсов.Выявляя и оценивая различные потенциальные риски, такие как рыночные риски, политические риски и риски изменения валютного курса, компания использовала диверсифицированные источники финансирования и рационально распределяла средства и другие ресурсы для снижения рисков и поддержки реализации своей стратегии расширения рынка.

3.2 Стратегия внедрения инноваций в продукт

Другая компания решила повысить свою конкурентоспособность за счет внедрения инновационных продуктов. В процессе управления финансами компании необходимо учитывать затраты на НИОКР и маркетинг, а также потенциальные риски, связанные с внедрением инновационных продуктов. Благодаря выявлению и оценке рисков компания разработала соответствующие меры по контролю рисков, такие как создание надежной системы управления НИОКР и контроля качества, чтобы обеспечить успешное внедрение инновационных продуктов и снизить потенциальные финансовые риски.

В финансовом менеджменте корпоративная стратегия и управление рисками неразрывно связаны. Интегрируя стратегию и управление рисками в систему финансового менеджмента, компании могут лучше реагировать на изменения рынка и вызовы, связанные с рисками, а также достигать долгосрочных экономических целей и максимизировать выгоды. Поэтому предприятиям следует рассматривать стратегию и управление рисками как основное содержание финансового менеджмента и уделять внимание инновациям и постоянному совершенствованию процесса внедрения, чтобы адаптироваться к изменяющейся рыночной среде и конкурентной ситуации.

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СТРАТЕГИЧЕСКИЙ МЕНЕДЖМЕНТ В ФИНАНСОВОМ МЕНЕДЖМЕНТЕ

***Аннотация**: Финансовый менеджмент играет важную роль в функционировании предприятия. Он включает в себя источники и использование средств, управление финансовыми рисками и принятие финансовых решений предприятием. Стратегическое управление относится к планированию долгосрочного направления развития предприятия, охватывающему постановку целей компании, распределение ресурсов и принятие решений. В этой статье будет рассмотрена важность стратегического управления в финансовом менеджменте, а также представлены методы и стратегии внедрения стратегического управления в финансовый менеджмент.*

***Ключевые слова:** Управление финансовыми рисками; принятие финансовых решений*

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STRATEGIC MANAGEMENT IN FINANCIAL MANAGEMENT

***Summary:** Financial management plays an important role in the functioning of the company. It includes the sources and use of funds, financial risk management, and financial decision-making by the enterprise. Strategic management refers to planning the long-term direction of an enterprise's development, encompassing setting company goals, allocating resources, and making decisions.This article will examine the importance of strategic management in financial management, as well as present methods and strategies for implementing strategic management in financial management.*

***Keywords:** Financial risk management; financial decision-making*

1. Важность стратегического управления в финансовом менеджменте

Важность стратегического управления в финансовом менеджменте отражается в следующих аспектах :

Долгосрочное планирование и постановка целей: Стратегическое управление может помочь компаниям прояснить свои долгосрочные

финансовые цели и способы их достижения. Благодаря разработке финансовых стратегических планов предприятия могут лучше планировать использование и инвестирование средств, обеспечивать рациональное распределение финансовых ресурсов и повышать конкурентоспособность предприятий[136].

Источник и использование средств: Стратегическое управление может помочь компаниям определить источник и использование средств. Предприятия могут выбирать источники финансирования, подходящие для их собственного развития, с помощью стратегического управления, включая акционерное финансирование, долговое финансирование и т.д., для удовлетворения потребностей предприятий в капитале. В то же время, благодаря стратегическому управлению, предприятия могут рационально использовать средства, оптимизировать операционную эффективность и добиваться улучшения финансовых показателей.

Управление рисками: Стратегическое управление может помочь компаниям спрогнозировать и оценить возможные финансовые риски, а также сформулировать соответствующие меры по их снижению. Благодаря стратегическому управлению предприятия могут создать надежный механизм внутреннего контроля для обеспечения соответствия требованиям и прозрачности финансовой деятельности и предотвращения возникновения финансовых рисков.

2. Методы и стратегии внедрения стратегического управления в финансовом менеджменте

В финансовом менеджменте для осуществления стратегического управления могут быть приняты следующие методы и стратегии：

Формулировать финансовые стратегические планы: Предприятия должны формулировать четкие финансовые стратегические планы, основанные на их собственном позиционировании и потребностях в развитии. План должен включать постановку целей, источники и использование средств, контроль рисков и т.д., чтобы направлять разработку и реализацию корпоративных финансовых решений.

Создание финансовой бюджетной системы: Финансовый бюджет является важным инструментом финансового управления, используемым для планирования и контроля использования средств. Предприятиям следует создать надежную финансовую бюджетную систему, включая подготовку бюджета, его исполнение и бюджетный контроль, чтобы обеспечить соответствие финансовой деятельности стратегическим целям.

Проводить оценку финансовых рисков и управление ими: Предприятия должны оценивать возможные финансовые риски и принимать соответствующие управленческие меры.Это включает в себя разработку стратегий управления рисками, создание механизмов раннего

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предупреждения о рисках и резервных фондов для компенсации влияния потенциальных рисков на финансовое положение предприятия[137].

Совершенствование финансовой отчетности и анализа: Финансовая отчетность является важным отражением финансового состояния и операционных показателей предприятия. Предприятиям следует усилить подготовку финансовых отчетов, включая точность и своевременность представления финансовых данных, с тем чтобы обеспечить руководству поддержку в принятии стратегических решений.

Оптимизация структуры корпоративного управления: Структура корпоративного управления играет ключевую роль в стратегическом управлении финансами. Предприятиям следует оптимизировать свою структуру управления, усилить внутренний контроль, прояснить взаимосвязь между полномочиями и ответственностью, а также повысить эффективность и точность принятия финансовых решений.

Благодаря внедрению вышеуказанных методов и стратегий предприятия могут лучше сочетать стратегическое управление с финансовым менеджментом для достижения согласованности финансовых и стратегических целей.

Стратегическое управление в области финансового менеджмента имеет важное значение для долгосрочного развития предприятия. Благодаря четким целям, разумному распределению средств, эффективному управлению рисками и совершенствованию финансовой отчетности и анализа предприятия могут лучше внедрять стратегическое управление и повышать финансовые показатели и конкурентоспособность. Поэтому при управлении финансами предприятиям следует уделять внимание внедрению стратегического управления и внедрять соответствующие методы и стратегии для достижения долгосрочного устойчивого развития предприятий.

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APOPTOZ VA NEKROZ. HUJAYRA O’LIMINING MORFOLOGIK VA MOLEKULYAR ASOSLARI

Annotatsiya: *Mazkur maqolada hujayra o‘limining asosiy shakllari – apoptoz, nekroz, onkoz, piroptoz va avtofagiyaning morfologik va molekulyar xususiyatlari chuqur tahlil qilinadi. Dasturlashtirilgan va nazoratsiz hujayra o‘limi o‘rtasidagi farqlar, ularga vositachilik qiluvchi signallar va fermentlar, xususan kaspazalar roli yoritilgan. Har bir hujayra o‘limi shaklining immun javob va yallig‘lanish bilan bog‘liqligi, shuningdek, ularning fiziologik va patologik kontekstdagi ahamiyati muhokama qilinadi. Maqola hujayra nobud bo‘lishining murakkab spektrini ochib beradi hamda zamonaviy tibbiyotda ushbu jarayonlarning o‘rganilishi zarurligini asoslaydi.*

Kalit so’zlar: *Apoptoz, kaspaz oilasi, avtofagiya, onkoz, piroptoz, nekroz*

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APOPTOSIS AND NECROSIS. MORPHOLOGICAL AND MOLECULAR BASIS OF CELL DEATH

Abstract: *This article provides an in-depth analysis of the morphological and molecular features of the main forms of cell death - apoptosis, necrosis, oncosis, pyroptosis and autophagy. The differences between programmed and uncontrolled cell death, the role of signals and enzymes that mediate them, in particular caspases, are highlighted. The relationship of each form of cell death to the immune response and inflammation, as well as their significance in the physiological and pathological context, is discussed. The article reveals the complex spectrum of cell death and justifies the need to study these processes in modern medicine.*

Keywords: *Apoptosis, caspase family, autophagy, oncosis, pyroptosis, necrosis*

Hujayra o‘limi organizm hayot faoliyatida muhim biologik jarayonlardan biri hisoblanadi. U hujayralarning o‘z vaqtida nobud bo‘lishi, ularning yangilanishi, shuningdek, immunologik javob shakllanishida hal qiluvchi rol o‘ynaydi [6]. Hujayra o‘limining turli shakllari mavjud bo‘lib, ular orasida apoptoz, nekroz, avtofagiya, onkoz va piroptoz asosiy turlar sifatida ajralib turadi. Bu jarayonlar morfologik va molekulyar jihatdan farqlanadi va har biri organizmda turlicha fiziologik yoki patologik holatlar bilan bog‘liq. Ushbu maqolada hujayra o‘limining asosiy shakllari, ularning yuzaga kelish mexanizmlari, asosiy fermentlar, signallash yo‘llari va biologik ahamiyati tahlil qilinadi [1].

Apoptoz, nekroz, onkoz, piroptoz va avtofagiya kabi hujayra o‘limi shakllarini o‘rganishdan maqsad — ularning morfologik va molekulyar xususiyatlarini chuqur tahlil qilish, bu jarayonlarni faollashtiruvchi signallar va fermentlar (ayniqsa, kaspazalar) ishtirokini o‘rganish, shuningdek, dasturlashtirilgan va nazoratsiz hujayra o‘limi o‘rtasidagi farqlarni aniqlashdan iboratdir. Shuningdek, har bir o‘lim shaklining immun javob, yallig‘lanish jarayonlari va organizmning fiziologik hamda patologik holatlaridagi roli tahlil qilinadi. Ushbu bilimlar zamonaviy tibbiyotda hujayra o‘limining diagnostikasi, terapiyadagi ahamiyati va ilmiy izlanishlar uchun zarurligini asoslashga xizmat qiladi [2].

NEKROZ

Apoptozda ishtirok etadigan enzimatik mexanizmning biologik ahamiyati va ko'proq qadrlanishi bu jarayonni boshqa mexanizmlar bilan sodir bo'ladigan hujayra o'limidan ajratish muhimligini ko'rsatadi. Ilmiy aloqada aniqlik zarurati va informatsion tekshiriladigan gipotezalarni yaratish maqsadi hujayra o'limi nomenklaturasi bilan bog'liq asosiy muammoni keltirib chiqaradi, bu apoptoz bilan sodir bo'lmagan hujayra o'limi uchun mos nomlar yoki tasniflarning yo'qligi [7].

Nekroz - bu noapoptotik, tasodifiy hujayra o'limi uchun ishlatiladigan atama. Biroq, hujayra o'limiga oid adabiyotlarda ko'pincha e'tibordan chetda qolgan asosiy masala - o'layotgan hujayrada sodir bo'ladigan strukturaviy va biokimyoviy jarayonlar va o'limning o'zi o'rtasidagi farq. Nekroz - bu patologlar tomonidan o'lik to'qimalar yoki hujayralar mavjudligini belgilash uchun ishlatiladigan atama bo'lib, ular o'lganidan keyin, preletal jarayonlardan qat'i nazar, hujayralarda sodir bo'lgan o'zgarishlar yig'indisidir [8]. Shuning uchun nekroz hujayra allaqachon o'lib, uning atrofidagi muhit bilan muvozanatga erishgandan keyin ko'rilgan morfologik stigmatani nazarda tutadi. Shunday qilib, fagotsitoz bo'lmasa, apoptotik tanalar o'z yaxlitligini yo'qotib, ikkilamchi yoki apoptotik nekrozga o'tishi mumkin. Bu erda apoptotik nekroz atamasi apoptotik dastur orqali bu holatga kelgan o'lik hujayralarni tasvirlaydi . Nekrozning mavjudligi bizga hujayra o'lganligini aytadi, lekin o'lim qanday sodir bo'lganligi shart emas[3].

ONKOZ

Onkoz atamasi hujayra o'limining ko'plab tadqiqotchilari tomonidan apoptozga qarshi vosita sifatida qabul qilingan.

Onkoz ("onkos" dan, shishish degan ma'noni anglatadi) hujayra shishishi, organellalarning shishishi, blebbing va membrana o'tkazuvchanligini oshirish bilan birga hujayra o'limiga olib keladigan preletal yo'l deb ta'riflanadi. Onkoz jarayoni oxir-oqibat hujayra energiya zaxiralarining tugashiga va plazma membranasidagi ion nasoslarining ishdan chiqishiga olib keladi. Onkoz ATP hosil bo'lishiga xalaqit beradigan toksik moddalar yoki nazoratsiz uyali energiya iste'moliga olib keladigan jarayonlardan kelib chiqishi mumkin. Hozirgi vaqtda onkoz bilan birga keladigan o'zgarishlar faol ferment-katalizli biokimyoviy jarayonlar natijasida yuzaga kelishi mumkinligi tan olinmoqda [4].

DASTURLANGAN HUJAYRALAR O'LIMI

Apoptoz va dasturlashtirilgan hujayra o'limi ko'pincha sinonim sifatida ishlatiladi. Biroq, biz muhokama qilganimizdek, boshqa molekulyar hujayralar o'lim yo'llari tavsiflangan. Dasturlashtirilgan hujayra o'limi genetik jihatdan kodlangan signallarga yoki o'layotgan hujayra ichidagi faoliyatga bog'liq bo'lgan hujayra o'limi sifatida aniqroq ta'riflanishi mumkin. Shuning uchun, "dasturlashtirilgan" belgisi, mexanizmdan yoki apoptozning xarakterli xususiyatlari jarayonga hamroh bo'lishidan qat'i nazar, o'layotgan hujayralar tomonidan ta'qib qilingan sobit yo'lga ishora qiladi. Zarar yetkazuvchi stimulning bevosita ta'siri natijasida hujayraning o'tkir parchalanishi dasturlashtirilgan hujayra o'limining kontseptual qarama-qarshisidir, chunki u hujayra faolligini talab qilmaydi va faqat zarar yetkazuvchi stimulning yo'qligi bilan oldini oladi [5].

Dasturlashtirilgan hujayra o'limi - O'layotgan hujayra ichidagi genetik kodlangan signallarga yoki faoliyatga bog'liq; hujayraning o'limiga olib keladigan potentsial o'zgartirilishi mumkin bo'lgan hodisalar ketma-ketligi

Apoptoz - Kaspazlarning kichik to'plami tomonidan vositachilik qilingan; morfologiya yadro va sitoplazmatik kondensatsiya va membrana bilan bog'langan hujayra bo'laklari yoki apoptotik jismlarning shakllanishini o'z ichiga oladi; yallig'lanish emas

Avtofagiya - Avtofagik vakuolalarda o'layotgan hujayra ichidagi hujayra tarkibiy qismlarining degradatsiyasi; yallig'lanish emas

Onkoz - Hujayra va organellalarning shishishi va membrana o'tkazuvchanligini oshirish bilan birga hujayra o'limiga olib keladigan preletal yo'l; yallig'lanishga olib keladi.

Piroptoz - Membrananing parchalanishiga va yallig'lanishga olib keladigan sitokinni qayta ishlashga olib keladigan kaspaza-1 faolligi natijasida kelib chiqadigan yallig'lanish yo'li.

Nekroz Atrof-muhit bilan muvozanatga kelgan o‘lgan hujayralarda kuzatiladigan o‘zgarishlar.

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SUT BEZI SARATONI DIAGNOZI UCHUN TREPANOBIOPSIYA NATIJALARINI TAHLILI

Izoh: *Trepanobiopsiya - sut bezi saratonini tashxislashning samarali usuli bo'lib, gistologik va immunohistokimyoviy tahlil uchun to'qimalarni olish imkonini beradi. Usul o'simtani aniq tekshirishni, uning turini va biologik belgilarini aniqlashni ta'minlaydi, bu davolash taktikasini tanlash uchun muhimdir.*

Kalit so'zlar: *sut bezi saratoni, trepanobiopsiyasi, diagnostika, gistologiya, adenokarsinoma, lobulyar saraton, kanal saratoni, noinvaziv karsinoma, mastopatiya, onkologiya.*

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ANALYSIS OF RESULTS OF TREPANOBIOPSY FOR THE DIAGNOSIS OF BREAST CANCER

Abstract: *Trepanobiopsy is an effective method for diagnosing breast cancer, allowing to obtain tissue for histological and immunohistochemical analysis. The method provides accurate verification of the tumor, determination of its type and biological markers, which is important for choosing treatment tactics.*

Key words: *breast cancer, trephine biopsy, diagnostics, histology, adenocarcinoma, lobular cancer, ductal cancer, non-invasive carcinoma, mastopathy, oncology.*

Kirish. Ayollar orasida sut bezi saratoni keng tarqalgan. JSST tomonidan ma'lumotlariga ko'ra, har yili dunyo bo'ylab sut bezi saratonining 1,38 milliondan ortiq yangi holatlari aniqlanadi.

Bezlar tufayli 460 ming o'lim O‘zbekistonda ayollar orasida sut bezi saratoni bilan kasallanish birinchi o‘rinda turadi va bachadon bo‘yni saratoni bilan bog‘liq. Ushbu patologiyaning butun muammosi ko'pincha bemorlarning yarmidan ko'pida bu kasallik I - II bosqichlarda aniqlanishiga asoslanadi . O'smalarning preklinik, paypaslanmaydigan shakllari kamroq aniqlanadi. Sut bezi saratonini erta tashxislashning invaziv bo'lmagan usullari orasida molekulyar usullar eng samarali hisoblanadi. O'simtaning aniq mammografik belgilari bo'lgan palpatsiya qilinadigan o'smalar bo'lsa, biopsiya diagnostikasi o'tkaziladi. Bugungi kunda trepanobiopsiya onkomamologlar orasida keng qo'llaniladigan amaliyotga aylandi. Shubhali joylardan parchalarni o'rganish, siqish, ularni talqin qilish, boshqa mavjud usullar bilan birgalikda davolashning radikal usullarini tanlashda va kasallikning oqibatlarini bashorat qilishda yordam beradi.

Tadqiqotning vazifalari: Samarqand tibbiyot universiteti 1-klinikasi patologik anatomiya bo‘limiga keyingi 5 yil davomida sut bezidan olingan trepanobiopsiya materiallarini tahlil qilishga qaror qildik .

Materiallar va tadqiqot usullari: Bu davrda kafedraga 106 nafar ayollardan trepanobiopsiya materiallari kelib tushdi. Ularning yoshi 29 yoshdan 69 yosh oralig’ida. Eng yuqori yosh cho'qqisi 35 yoshdan 50 yoshgacha bo'ladi. Trepanobiopsiya materiallaridan tegishli laboratoriya ishlovidan so'ng gematoksilin-iozin bilan bo'yalgan va Van Gieson usulidan foydalangan holda bo'laklar tayyorlandi.

Olingan natijalar: Birlamchi trepanoangiografiya materialiga asoslanib, 89 ta bemorga sut bezi saratoni tashxisi qo'yilgan. Bemorlarning yoshi 32 yoshdan 69 yosh oralig’ida;

Saraton kasalligi ko'pincha 34-51 yoshdagi bemorlarda aniqlanadi. 12 ta ayolda trepanobiopsiya materiali asosida mastopatiya, 3 ta ayolda fibroz adenoz va ikkita ayolda sut bezining fibroadenomasi aniqlangan. Adenozli ikki ayol takroriy trepanobiopsiyasidan o'tkazildi va ulardan birida saraton kasalligi aniqlandi.

Saraton kasalligi bilan og'rigan bemorlarning 11 nafari turmushga chiqmagan va tug'magan, 8 nafar ayolda esa saraton proliferativ mastopatiyadan keyin rivojlangan. Bunday bemorlarning yoshi 38-65 yosh oralig’ida. 7 nafar bemorda saraton takroriy mastitdan keyin rivojlandi va ularning barchasi 45 yoshgacha.

Mikroskopik usulda 56 ta ayolda lobulyar saraton aniqlangan, ulardan 31 tasida infiltrativ o'sma o'sishi kuzatilgan. Gistologik rasm adenokarsinoma, tolali va medullar saratonining turli darajalariga to'g'ri keldi. 21 ta bemorda noinvaziv lobulyar karsinoma va 4 bemorda carsinoma in situ tashxisi qo'yilgan. 4129 ta bemorda duktal karsinoma mikroskopik tashxis qo'yilgan va ularning 22 tasida o'simta invaziv edi. To'rt nafar bemorga ko'krak qafasining Paget o'smasi va sut bezining 301 areolasi tashxisi qo'yilgan.

Xulosa: Trepanobiopsiya sut bezi saratonini ob'ektiv tashxislash usuli sifatida onkologik amaliyotda keng qo'llaniladi. Trepanobnopsiya paytida eng aniq materialni olish uchun rentgen nurlari yoki ultratovush apparati ostida troakar ignasini ko'rish kerak, ya'ni to'qimalar bo'laklarini olishning stereotaksik usulini

qo'llash kerak. Ushbu diagnostika usuli palpatsiya qilinadigan shakllanish 1 sm ga etmagan va o'simta invaziv bo'lmagan hollarda ham qo'llanilishi mumkin.

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РАЗРАБОТКА ЭЛЕКТРОННОГО УЧЕБНОГО ПОСОБИЯ ПО ДИСЦИПЛИНЕ «ГИСТОЛОГИЯ, ЦИТОЛОГИЯ И ЭМБРИОЛОГИЯ»: АКЦЕНТ НА ЗАДАЧИ И МЕТОДЫ ГИСТОЛОГИ

Аннотация. *В условиях активного развития цифровых образовательных технологий особую значимость приобретает создание электронных учебных пособий, ориентированных на повышение эффективности и качества медицинского образования. Настоящая статья посвящена описанию этапов разработки и внедрения электронного учебного пособия по разделу «Задачи и методы гистологии» в рамках дисциплины «Гистология, цитология и эмбриология». Представлены педагогические цели, методологическая база, структура и содержание пособия, а также результаты его апробации среди студентов медицинского вуза. В ходе исследования выявлено, что использование электронного формата позволяет оптимизировать образовательный процесс, активизировать самостоятельную познавательную деятельность студентов и повысить уровень усвоения материала.*

Ключевые слова: *гистология, медицинское образование, электронное пособие, цифровые технологии, методы гистологического исследования, педагогические инновации.*

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DEVELOPMENT OF AN ELECTRONIC TEXTBOOK FOR THE DISCIPLINE "HISTOLOGY, CYTOLOGY AND EMBRYOLOGY": FOCUS ON THE OBJECTIVES AND METHODS OF HISTOLOGY

Abstract: *In the context of the rapid advancement of digital educational technologies, the creation of electronic textbooks aimed at improving the effectiveness and quality of medical education is of particular importance. This article describes the stages of development and implementation of an electronic textbook for the section "Objectives and Methods of Histology" within the discipline "Histology, Cytology and Embryology." The article outlines the pedagogical goals, methodological framework, structure, and content of the textbook, as well as the results of its pilot implementation among medical students. The study found that the use of the electronic format helps optimize the educational process, stimulates students' independent cognitive activity, and enhances the level of material assimilation.*

Keywords: *histology, medical education, electronic textbook, digital technologies, histological research methods, pedagogical innovations.*

Актуальность: несмотря на наличие традиционных учебников и атласов, студенты нередко испытывают трудности при изучении абстрактных понятий и методик, используемых в гистологии. Современное поколение обучающихся, «цифровые аборигены», предпочитает визуально ориентированный, интерактивный контент, который способствует более эффективному усвоению материала. В условиях модернизации высшего медицинского образования и внедрения дистанционных и смешанных форм обучения особенно важным становится наличие качественного электронного образовательного контента [1,2].

Создание электронного пособия по задачам и методам гистологии отвечает требованиям ФГОС ВО, способствует реализации компетентностного подхода и позволяет более эффективно организовать как очное, так и дистанционное обучение студентов.

Цель и задачи исследования

Цель: Разработка и внедрение электронного учебного пособия по разделу «Задачи и методы гистологии» для студентов медицинского вуза.

Задачи: определить дидактические и методические требования к электронному пособию, разработать структуру, содержание и мультимедийное наполнение пособия, провести апробацию пособия в учебном процессе, оценить эффективность использования ресурса.

Материалы и методы

Разработка электронного учебного пособия проводилась на базе кафедры гистологии и медицинской биологии Ташкентской медицинской академии. В исследовании приняли участие студенты 1 курса лечебного факультета (n = 112), изучающие дисциплину «Гистология, цитология и эмбриология».

Для создания электронного пособия была использована специализированная программа **TurboSite**, предназначенная для конструирования образовательных ресурсов с мультимедийным и интерактивным контентом. Программа позволила разработать структурированное учебное пространство, включающее следующие компоненты:

- **Теоретический блок**: текстовый материал с гиперссылками, авторские схемы и иллюстрации;
- **Мультимедийные модули**: видеолекции по методам гистологических исследований, анимации лабораторных процедур;
- **Интерактивные задания**: тесты с мгновенной обратной связью, элементы перетаскивания и множественного выбора;
- **Раздел обратной связи**: встроенные формы для вопросов и комментариев студентов.

Для оценки эффективности использования пособия были применены следующие методы- анкетирование студентов до и после работы с пособием; сравнительный анализ результатов текущего и итогового контроля знаний; экспертная оценка преподавателей кафедры [3,4].

Результаты: после внедрения электронного пособия были получены следующие результаты: 87% студентов отметили, что структура пособия была удобной и логичной; 82% — сообщили, что электронный формат улучшил понимание гистологических методов; средний балл за итоговое тестирование повысился с 71% до 88%; преподаватели отметили увеличение вовлечённости студентов в процесс самостоятельной подготовки. ьАнализ открытых ответов показал, что наиболее ценными для студентов оказались видеоматериалы и интерактивные тесты, которые позволили лучше подготовиться к практическим занятиям.

Обсуждение: Полученные результаты соответствуют данным отечественных и зарубежных исследований в области цифрового образования. Электронные пособия позволяют не только адаптировать учебный процесс к индивидуальному стилю обучения, но и обеспечивают непрерывную обратную связь, что особенно важно при изучении дисциплин морфологического цикла. Кроме того, цифровой формат делает возможным регулярное обновление и дополнение содержания в соответствии с последними научными достижениями [5].

Выводы: Электронное пособие по разделу «Задачи и методы гистологии» является эффективным инструментом повышения качества медицинского образования. Внедрение пособия в учебный процесс позволило повысить успеваемость и удовлетворённость студентов обучением. Перспективами проекта являются расширение тематики, интеграция виртуальных лабораторий и использование искусственного интеллекта для адаптивного обучения.

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ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ДЕЯТЕЛЬНОСТИ УЧРЕЖДЕНИЙ ЗДРАВООХРАНЕНИЯ

Аннотация: *В статье рассмотрена структура системы здравоохранения в Российской Федерации. Приведена характеристика уровней лечебно-профилактической помощи. Изучены источники финансирования учреждений здравоохранения.*

Ключевые слова: *здравоохранение, система здравоохранения, медицинские учреждения, источники финансирования, средства обязательного медицинского страхования.*

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THEORETICAL FOUNDATIONS OF THE ACTIVITIES OF HEALTHCARE INSTITUTIONS

Abstract: *The article examines the structure of the healthcare system in the Russian Federation. The characteristic of the levels of therapeutic and preventive care is given. The sources of financing for healthcare institutions have been studied.*

Keywords: *healthcare, healthcare system, medical institutions, sources of financing, means of compulsory medical insurance.*

Здравоохранение – это сфера государственной деятельности, нацеленная на организацию и обеспечение доступности медицинских услуг для населения, а также на сохранение и улучшение здоровья граждан. На рисунке 1, представленная действующая структура национальной системы здравоохранения.

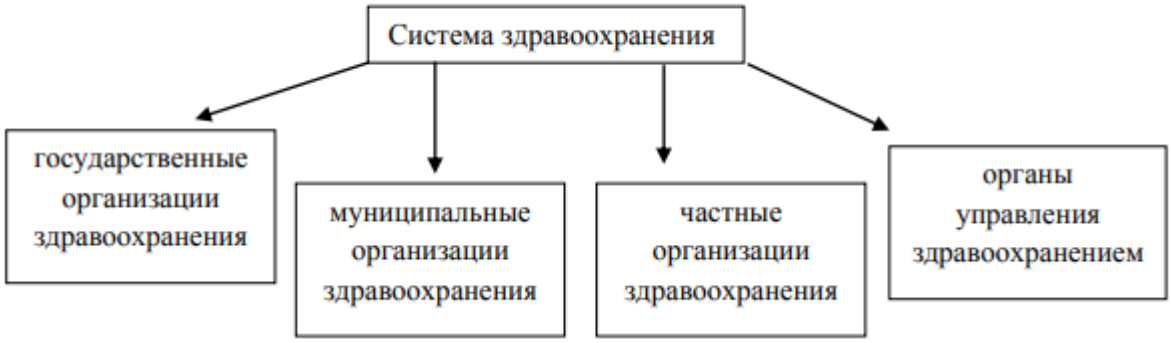

Рисунок 1 – Действующая структура национальной системы здравоохранения РФ

Учреждения, которые входят в государственную систему здравоохранения, обычно подчиняются вышестоящим органам управления, которые контролируют их работу и направляют их деятельность. Руководителей таких учреждений назначают и освобождают от должности эти органы. Муниципальные и частные медицинские учреждения, хотя и не подчиняются государственным органам, всё равно находятся под их контролем в отношении качества медицинских услуг и соблюдения общих правовых норм, которые распространяются на все учреждения здравоохранения [1].

На данный момент здравоохранение РФ составляет систему, состоящую из четырех уровней лечебно-профилактической помощи.

Первый уровень. Сюда входят та категория медицинских учреждений, которые оказывают первичную медико-санитарную помощь гражданам в городской и сельской местности. К данному уровню относятся такие учреждения как поликлиника, женские консультации, травмпункты, участковые сельские больницы. Суть работы данных учреждений заключается в предоставлении амбулаторно-профилактической помощи и проведения консультаций на конкретной территории. Медицинские учреждения первого уровня выполняют основную задачу по проведению всех видов профилактических мероприятий, оказания врачебной помощи около 75 процентам пациентов, которые обратились с острыми заболеваниями и хроническими обострениями.

Второй уровень. В данный уровень входят медицинские учреждения, оказывающие медицинскую помощь в городах или районах. Большая часть таких учреждений представлена городскими и районными больницами, роддома, дневные стационары, учреждения санаторного типа и реабилитационно-восстановительного назначения, специализированные образовательные учреждения.

Третий уровень. Региональные медицинские учреждения республиканского, краевого, областного значения. К данному типу относятся масштабные, с отделениями различных профилей больницы, способные

оказать высококвалифицированную медицинскую помощь врачами от 20 до 30 специальностей. Сюда входят акушерские стационары, предназначенные для женщин с различного рода патологическими отклонениями как в процессе беременности, так и в период до и после беременности. Медицинские учреждения такого типа оснащены реанимационными центрами, отделениями интенсивной терапии, центры реабилитации и восстановления, перинатальной медицины и т.д.

Четвертый уровень. Это уровень медицинских учреждений федерального и межрегионального масштаба. В сферу их деятельности входит проведение лечебных мероприятий более сложного и дорогостоящего уровня. Входят в состав научных центров, медицинских академий, высших медицинских образовательных учреждений и федеральных клинических учреждений. А также в состав данного уровня входят узкопрофильные диспансеры туберкулезного, кожно-венерологического, психоневрологического и наркологического типов [2].

На основании вышеперечисленных уровней лечебно-профилактической помощи, на всей территории РФ действуют медицинские учреждения, способные оказать как первую медицинскую помощь, так и высококвалифицированное медицинское обслуживание.

Как объект управления учреждения здравоохранения рассматриваются в виде государственной системы «…наблюдения, оценки, анализа и прогноза состояния здоровья населения и среды обитания человека, а также определения причинно-следственных связей между ними...» [3].

В качестве источников финансирования учреждений здравоохранения выступают бюджетные и внебюджетные источники. Реализация бюджетных средств имеет ряд ограничений в законодательстве. За счет бюджетных средств можно проводить:

– разработку и реализацию целевых программ;

– обеспечение профессиональной подготовки кадров;

– финансирование научных исследований;

– развитие материально-технической базы учреждения здравоохранения;

– оплату особо дорогостоящих видов лечения;

– финансирование медицинских учреждений при социально значимых заболеваниях;

– оказание медицинской помощи при массовых заболеваниях, в зонах стихийных бедствий и катастроф.

Другой источник, который на сегодняшний день во многих учреждениях здравоохранения занимает 2/3 всего финансирования, – это средства обязательного медицинского страхования (ОМС). Медицинские организации обязаны использовать эти средства в соответствии с программами ОМС (п. 1 ч. 1, п. 5 ч. 2 ст. 20 Федерального закона от 29.11.2010 № 326-ФЗ) [4]. Распределение средств между подведомственными медицинскими центрами происходит в зависимости от мощности центра

(количество коек или прикрепленного населения), профиля учреждения, кадрового обеспечения, результатов деятельности учреждения в прошлом году, осуществления новых методов диагностики и лечения. Поступление бюджетных средств в клинику напрямую зависит от количества пролеченных больных. Нынешняя система финансирования мотивирует лечебные учреждения увеличивать количество пролеченных пациентов и сокращать неэффективное и нерациональное расходование средств [5].

Важный источник финансирования лечебного учреждения – это платные услуги. Учреждения здравоохранения являются некоммерческими организациями, которые, за исключением казенных и частных учреждений, в соответствии со ст. 24 Федерального закона от 12.01.1996 № 7-ФЗ «О некоммерческих организациях» [6], могут оказывать платные услуги, если это предусмотрено их учредительными документами, лишь постольку, поскольку это служит достижению целей, ради которых они созданы, и если это соответствует таким целям. Приносящая доход деятельность практически не имеет ограничений в развитии внутри медицинской организации и имеет потенциал для существенного роста [7, 8].

Таким образом, современная система здравоохранения представлена государственными, муниципальными и частными организациями здравоохранения, а также органами управления здравоохранением. На данный момент здравоохранение РФ составляет систему, состоящую из четырех уровней лечебно-профилактической помощи: к первому уровню относятся медицинские учреждения, которые оказывают первичную медико-санитарную помощь гражданам в городской и сельской местности, на втором уровне – медицинские учреждения, оказывающие медицинскую помощь в городах или районах, третий уровень представлен региональными медицинскими учреждениями республиканского, краевого, областного значения, а четвертый – медицинскими учреждениями федерального и межрегионального масштаба. В качестве источников финансирования учреждений здравоохранения выступают средства федерального бюджета, средства региональных бюджетов, средства обязательного медицинского страхования, а также собственные доходы, полученные от оказания платных медицинских услуг.

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МОРФОФУНКЦИОНАЛЬНЫЕ МЕХАНИЗМЫ НАРУШЕНИЯ ЦЕЛОСТНОСТИ КИШЕЧНОГО БАРЬЕРА И НАНОТЕРАПЕВТИЧЕСКИЕ МЕТОДЫ ИХ ЛЕЧЕНИЯ

Аннотация. *Целостность кишечного барьера играет ключевую роль в поддержании гомеостаза организма. Нарушения в его структуре и функции связаны с развитием различных заболеваний, включая воспалительные заболевания кишечника (ВЗК). Современные исследования сосредоточены на понимании морфофункциональных механизмов этих нарушений и разработке нанотерапевтических подходов для их коррекции.*

Ключевые слова: *Кишечный барьер, Гомеостаз, Воспалительные заболевания кишечника, нанотерапевтические методы лечения.*

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MORPHOFUNCTIONAL MECHANISMS OF VIOLATION OF THE INTENSIVE BARRIER INTEGRITY AND NANOTHERAPEUTIC METHODS OF THEIR TREATMENT

Abstract. *The integrity of the intestinal barrier plays a key role in maintaining the body's homeostasis. Violations in its structure and function are associated with the development of various diseases, including inflammatory bowel diseases (IBD). Modern research is focused on understanding the morphofunctional mechanisms of these disorders and developing nanotherapeutic approaches for their correction.*

Keywords: *Intestinal barrier, Homeostasis, Inflammatory bowel diseases, nanotherapeutic methods of treatment.*

Введение

Кишечный барьер представляет собой сложную структуру, включающую эпителиальные клетки, плотные межклеточные контакты, слизистую оболочку и иммунные компоненты. Его нарушение может привести к повышенной проницаемости, воспалению и развитию различных патологий. Понимание механизмов этих нарушений и разработка

эффективных методов лечения являются актуальными задачами современной медицины [1].

1. Морфофункциональные нарушения кишечного барьера: количественные показатели

1.1 Повышение проницаемости кишечного барьера

Повышенная проницаемость кишечного барьера, известная как «синдром дырявого кишечника», характеризуется проникновением патогенов, токсинов и антигенов пищи в системный кровоток, что может вызывать воспалительные реакции и различные заболевания. Исследования показали, что у пациентов с болезнью Альцгеймера уровень зонулина, маркера проницаемости кишечника, был значительно выше по сравнению с контрольной группой ($p < 0,05$), что коррелировало с ухудшением постурального баланса и снижением физической активности [2].

1.2 Нарушение плотных межклеточных контактов. Плотные межклеточные контакты (tight junctions) играют ключевую роль в поддержании целостности кишечного барьера. После резекции тонкой кишки у мышей наблюдалось значительное снижение экспрессии белка окклюдина на 21% ($p < 0,05$), что сопровождалось увеличением проницаемости кишечника, измеренной по уровню флуоресцеин-изотиоцианат-декстран в сыворотке ($2,13 \pm 0,39$ нг/мкл против $1,62 \pm 0,23$ нг/мкл, $p < 0,001$).

1.3 Влияние физических нагрузок. Интенсивные физические нагрузки могут отрицательно влиять на целостность кишечного барьера. У бегунов после 60-минутной интенсивной тренировки на беговой дорожке наблюдалось увеличение проницаемости тонкой кишки, а также повышение уровня кишечного жирнокислот-связывающего белка (I-FABP) в крови, что свидетельствует о повреждении энтероцитов [3].

1.4 Влияние диеты и микробиоты. Дисбиоз кишечной микробиоты и высокожировая диета способствуют снижению экспрессии белков плотных контактов, таких как ZO-1 и окклюдин, увеличению продукции реактивных форм кислорода (ROS) и развитию воспаления. Это приводит к уменьшению толщины слизистого слоя и увеличению расстояния между эпителиальными клетками, что повышает проницаемость кишечного барьера.

2. Нанотерапевтические методы восстановления кишечного барьера. Современные нанотерапевтические подходы направлены на восстановление целостности кишечного барьера и модуляцию иммунного ответа. Например, наночастицы билирубина, связанные с низкомолекулярным водорастворимым хитозаном (LMWC-BRNPs), показали эффективность в восстановлении кишечного барьера и снижении воспаления при колите. Также разработаны нанопрепараты, содержащие кверцетин и дексаметазон, с колоноспецифической доставкой и чувствительностью к реактивным формам кислорода, которые эффективно восстанавливают целостность кишечного барьера и снижают воспаление [4].

Современные исследования сосредоточены на разработке нанопрепаратов, которые обеспечивают целенаправленную доставку

лекарственных средств непосредственно в воспалённые участки кишечника, минимизируя системные побочные эффекты. Одним из таких подходов является создание наночастиц, содержащих кверцетин и дексаметазон, с колоноспецифической доставкой и чувствительностью к ROS.

В одном из исследований была разработана наномедицина, сочетающая кверцетин и ацетат дексаметазона в единой платформе. Поверхность наночастиц была модифицирована пектином, что обеспечивает специфическую доставку в толстую кишку благодаря ферментативной деградации пектина микробиотой кишечника. Кроме того, система обладает чувствительностью к ROS, что позволяет контролировать высвобождение лекарств в ответ на воспалительные процессы [5].

2.1 Эффективность нанопрепаратов в восстановлении кишечного барьера. Применение таких нанопрепаратов показало, значительное улучшение состояния кишечного барьера. В частности, наблюдалось восстановление экспрессии белков плотных контактов, таких как окклюдин и клаудин-1, что свидетельствует о восстановлении целостности эпителия кишечника. Кроме того, отмечено снижение уровней провоспалительных цитокинов, таких как TNF-α и IL-6, что указывает на уменьшение воспаления.

Дополнительные исследования подтвердили, что нанопрепараты с кверцетином и дексаметазоном эффективно модулируют микробиоту кишечника, способствуя увеличению популяций полезных бактерий и снижению уровней патогенных микроорганизмов. Это также способствует восстановлению барьерной функции кишечника и снижению воспалительных процессов.

Заключение

Морфофункциональные нарушения кишечного барьера играют ключевую роль в патогенезе различных заболеваний. Использование количественных показателей, таких как уровни зонулина, экспрессия белков плотных контактов и маркеры воспаления, позволяет более точно оценивать состояние кишечного барьера и эффективность терапевтических вмешательств. Нанотерапевтические методы представляют собой перспективное направление в восстановлении целостности кишечного барьера и требуют дальнейших исследований для оптимизации их применения в клинической практике.

Нанопрепараты, содержащие кверцетин и дексаметазон с колоноспецифической доставкой и чувствительностью к ROS, представляют собой перспективный подход в лечении воспалительных заболеваний кишечника. Их способность восстанавливать целостность кишечного барьера, снижать воспаление и модулировать микробиоту делает их ценным инструментом в современной гастроэнтерологии.

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ИНФОРМАЦИОННЫЕ И КОММУНИКАТИВНЫЕ ТЕХНОЛОГИИ

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ULTRASONIK SENSOR YORDAMIDA TO'SIQLARDAN QOCHADIGAN BOLALAR UCHUN ROBOT MASHINA

Annotatsiya. *Arduino platasi yordamida ultrasonic sensori, DC motor hamda servo motorlar orqali to‘siqlarni aniqlab, o‘zi yo‘l topuvchi robot mashina dasturi ishlab chiqilgan. Ushbu dastur turli xil real sharoitlarda nazorat va xavfsizlikni kuchaytirish uchun samarali va foydalanuvchilarga qulay yechim taklif etadi.*

Kalit so'zlar: *Ultrasonic sensori, Arduino platasi, Servomotor, robot, to'siqlarni aniqlash.*

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A ROBOT CAR FOR CHILDREN THAT AVOIDS OBSTACLES USING AN ULTRASONIC SENSOR

Annotation. *Using an Arduino board, a robotic machine program was developed that detects obstacles and finds its way through an ultrasonic sensor, DC motor, and servo motors. This software offers an effective and user-friendly solution to enhance control and security in a variety of real-world environments.*

Kalit so'zlar: *Ultrasonic sensori, Arduino platasi, Servomotor, robot, to'siqlarni aniqlash.*

Keywords: Ultrasonic sensor, Arduino board, Servomotor, robot, obstacle detection.

By assembling a chilren’s robot car—integrating sensors, connecting them to an Arduino board, and developing code—users can create a multifunctional toy robot car for children that autonomously avoids obstacles. The existing children's robot car system is capable of detecting and avoiding obstacles. Arduino-based robot cars offer advantages for applications such as surveillance, industrial automation, search and rescue missions, and home automation tasks.

Today, remote-controlled cars offer children several developmental benefits including improved coordination, increased creativity, and strengthened family bonds. Such toys help children enhance focus, imagination, collaborative work with friends and relatives, and the ability to independently solve problems.

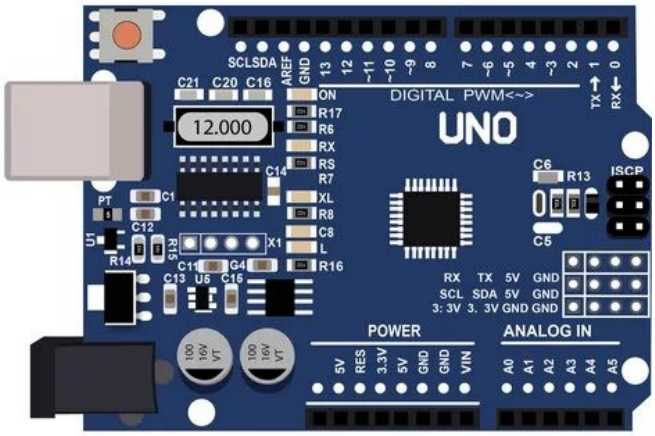


Figure 1. Arduino Uno Board

Arduino Uno is a popular microcontroller board based on the ATmega328P chip (Figure 1). It is a simple and user-friendly platform for electronics and programming projects. Arduino Uno is widely used for prototyping, education, and interactive projects. It features 14 digital I/O pins and 6 analog input pins, all of which can be configured as inputs or outputs through software (using pinMode(), digitalWrite(), and digitalRead() functions). These pins operate at 5V and can supply or receive up to 20 mA, with internal pull-up resistors of 20-50K ohms (disabled by default). To avoid permanent damage, the current on any I/O pin should not exceed 40 mA. It has 6 analog input pins labeled A0 to A5.

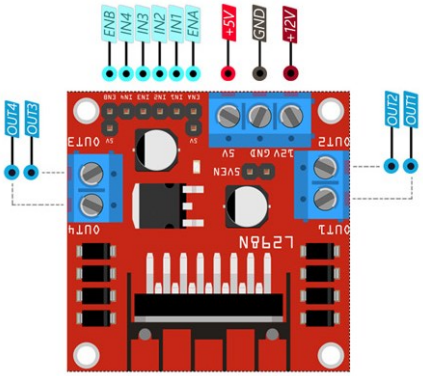


Figure 2. L298N Motor Driver

The motor driver shield is an electronic board used to control the speed and direction of DC motors via the Arduino microcontroller (Figure 2). It uses H-bridge circuits for variable speed and bidirectional control. Motor driver shields offer features such as ease of use, current sensing, and overcurrent protection. These shields are commonly used in robotics and automation projects for precise motor control.

Figure 3. SG-90 and MG90S Servo Motors

Servo motors, like the SG90 and MG90S models (Figure 3), are precise actuators that allow control over angle, speed, and acceleration and operate in closed-loop systems. A servo motor typically includes three wires: the brown wire for +5V power supply, the red wire for GND (ground), and the yellow wire for receiving PWM (Pulse Width Modulation) signals.

To drive the robot car, four DC motors and four wheels are required (Figure 4).

a **b** **c**

Figure 4. a) DC Motor b) Wheels c) Ultrasonic Sensor

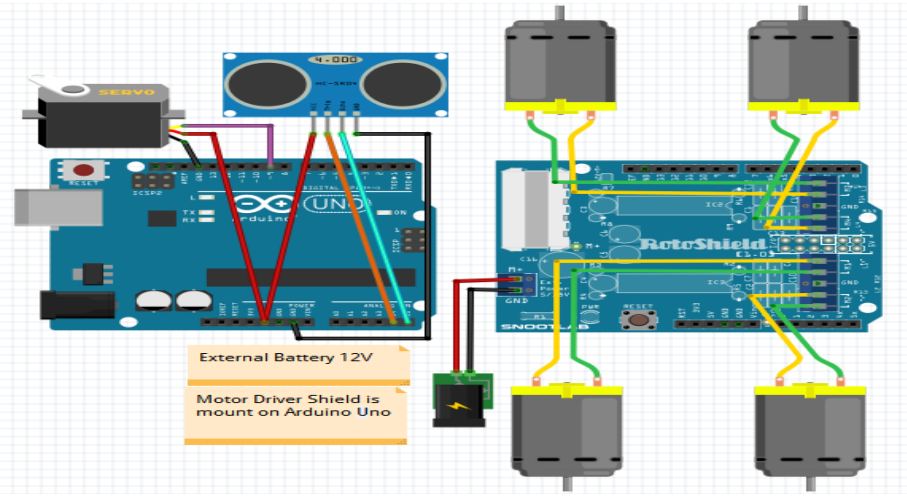
The ultrasonic sensor is used to detect obstacles in front of the robot car. It emits ultrasonic waves via the transmitter (Trigger) and receives the reflected waves via the receiver (Echo). The sensor sends the time delay between emission and reception to the Arduino to calculate the distance.

Ultrasonic sensors are commonly used in light vehicles to monitor surroundings and measure distances to obstacles—often used in parking assistance systems. They can also be installed along roads to detect the location and speed of moving vehicles(Figure 4).

Jumper wires are used to establish electrical connections between components. To power the children's robot car, a 9V or 6V rechargeable battery can be used. The wheels help balance the robot car.

Arduino IDE (Integrated Development Environment) is a software platform designed to simplify the process of writing code, compiling it, and uploading it to Arduino boards. It includes a built-in serial monitor that enables developers to debug and monitor Arduino projects in real time. The Arduino IDE supports a wide range of boards from basic Uno to advanced models like Nano, Mega, and Due. It is compatible with multiple operating systems including Windows, Mac OS X, and Linux.

Figure 5. Arduino Connection Diagram



Conclusion

Using Arduino to create an obstacle-avoiding children's robot car is a fun and practical initiative with various applications. By combining components such as DC motors, ultrasonic sensors, and motor drivers with Arduino code, it's possible to build a self-driving toy robot car for children that can detect and avoid obstacles. Developing this project provides an interactive opportunity for learning concepts in electronics, robotics, and coding. In essence, a children's toy robot car powered by Arduino fosters skills in robotics, programming, and problem-solving. Its real-world applications span across safety, surveillance, and search operations.

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БИЛИМ БЕРҮҮНҮН ТУРУКТУУ ӨНҮГҮҮСҮН КАМСЫЗ КЫЛУУДА МААЛЫМАТТЫК ТЕХНОЛОГИЯЛАРДЫН РОЛУ

Аннотация. *Бул макалада маалыматтык-коммуникациялык технологиялардын (МКТ) билим берүүдөгү туруктуу өнүгүүгө тийгизген таасири изилденет. Теориялык бөлүмдө МКТнын билим берүү системасындагы ролу жана анын туруктуу өнүгүүгө кошкон салымы каралат. Практикалык бөлүмдө Кыргызстандагы мектептерде МКТнын колдонулушу боюнча сурамжылоонун жыйынтыктары сунушталат.*

Ачкыч сөздөр: *маалыматтык технологиялар, туруктуу өнүгүү, билим берүү, Кыргызстан, МКТ*

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THE ROLE OF INFORMATION TECHNOLOGIES IN ENSURING SUSTAINABLE DEVELOPMENT OF EDUCATION

Annotation. *This paper explores the impact of information and communication technologies (ICT) on the sustainable development of the education sector. The theoretical section discusses the integration of ICT in educational practices and its contribution to accessibility and quality. The practical section presents findings from a survey conducted among educators and students in Kyrgyzstan regarding the use of ICT tools in their learning environments.*

Keywords: *information technologies, sustainable development, education, Kyrgyzstan, ICT*

Маалыматтык-коммуникациялык технологиялар (МКТ) билим берүү системасында билимге жеткиликтүүлүктү жогорулатуу, окутуунун сапатын жакшыртуу жана инновацияларды киргизүүдө маанилүү роль ойнойт. МКТнын билим берүүгө интеграциясы окуучулардын жана мугалимдердин маалыматка жетүү мүмкүнчүлүгүн кеңейтет, окутуу процессин интерактивдүү жана кызыктуу кылат. Бул, өз кезегинде, билим берүүнүн сапатын жана натыйжалуулугун жогорулатууга көмөктөшөт .

МКТнын билим берүүнүн туруктуу өнүгүүсүнө тийгизген таасири

Билим берүүнүн туруктуу өнүгүүсү — бул билим берүү системасынын социалдык, экономикалык жана экологиялык аспектилерде узак мөөнөттүү жана тең салмактуу өнүгүүсүн камсыз кылуу. МКТ бул максатка жетүүдө төмөнкүдөй жолдор менен салым кошот:

- Билимге жеткиликтүүлүктү кеңейтүү: МКТнын жардамы менен алыскы жана жеткиликтүү эмес аймактардагы окуучулар да сапаттуу билимге жетише алышат. Онлайн курстар, санариптик китептер жана башка ресурстар билимге болгон тоскоолдуктарды азайтат .
- Окутуунун сапатын жакшыртуу: Интерактивдүү окутуу куралдары, мультимедиялык материалдар жана симуляциялар окуучулардын билимди өздөштүрүүсүн жакшыртат. Бул ыкмалар окуучулардын кызыгуусун арттырып, активдүү катышуусун камсыз кылат .
- Мугалимдердин кесиптик өнүгүүсү: МКТ мугалимдерге өз билимдерин жана окутуу ыкмаларын өркүндөтүүгө мүмкүнчүлүк берет. Онлайн курстар жана вебинарлар аркылуу мугалимдер жаңы методологияларды үйрөнүп, сабактарында колдонушат .
- Экологиялык туруктуулук: Санариптик материалдарды колдонуу кагазга болгон муктаждыкты азайтып, жаратылыш ресурстарын сактоого көмөктөшөт. Бул билим берүү системасында экологиялык туруктуулукту камсыз кылууга жардам берет .

ЮНЕСКОнун Кингдао декларациясы МКТнын билим берүүдөгү маанисин баса белгилеп, анын билимге жеткиликтүүлүктү, сапатты жана эффективдүүлүктү жогорулатуудагы ролун тааныган. Бул декларацияда МКТны билим берүү системасына интеграциялоо боюнча саясаттык сунуштар берилген. Мындан тышкары, БУУнун Туруктуу өнүгүүнүн максаттарынын (SDGs) бири — сапаттуу билим берүүнү камсыз кылуу. МКТ бул максатка жетүүдө негизги куралдардын бири катары каралат .

МКТны билим берүү системасына интеграциялоодо бир катар кыйынчылыктар бар:

- Инфраструктуранын жетишсиздиги: Айрым аймактарда интернетке жана техникалык жабдууларга жеткиликтүүлүктүн жоктугу МКТны эффективдүү колдонууга тоскоол болот .

- Мугалимдердин даярдыгынын жетишсиздиги: Көптөгөн мугалимдер МКТны окутууда колдонуу боюнча жетиштүү билимге жана тажрыйбага ээ эмес .
- Санариптик теңсиздик: Окуучулардын арасында санариптик көндүмдөрдүн деңгээли ар кандай, бул билимге жеткиликтүүлүктө теңсиздикти жаратат .
- Мазмундун сапаты: Онлайн ресурстардын сапаты жана актуалдуулугу ар дайым жогору болбойт, бул окуучулардын билим деңгээлине терс таасир тийгизиши мүмкүн .

Кыргызстанда МКТны билим берүүдө колдонуу боюнча бир катар демилгелер ишке ашырылууда. ЮНЕСКОнун колдоосу менен мектептерде онлайн окутуу өнүктүрүлүүдө . Бирок, айыл жергесиндеги мектептерде инфраструктуранын жетишсиздиги жана мугалимдердин даярдыгынын төмөн деңгээли сыяктуу көйгөйлөр бар. Бүгүнкү күндө билим берүүдө санариптик трансформация — бул өтө маанилүү процесс болуп эсептелет. Санариптик трансформация — бул технологияны жөн гана колдонуу эмес, билим берүү системасын түп-тамырынан бери өзгөртүү дегенди билдирет. Ал төмөнкүлөрдү камтыйт:

- Адаптивдүү окутуу платформалары (мисалы, Coursera, Khan Academy)
- Жасалма интеллектке негизделген окуу жардамчылары
- Санариптик баалоо системалары (Google Classroom, Moodle ж.б.)
- Big data жана аналитика аркылуу билим сапатын баалоо

OECD (2023) маалыматына ылайык, санариптик технологияларды натыйжалуу колдонгон өлкөлөрдө окуучулардын окуудагы ийгилиги орточо 15–20% жогору болот.

Маалыматтык технологиялар жана инклюзивдүү билим берүү

МКТ мүмкүнчүлүгү чектелген адамдар үчүн билим алууну жеткиликтүү кылууга чоң мүмкүнчүлүк берет. Мисалы:

- Угуу жөндөмү чектелген адамдар үчүн субтитр менен видеолор;
- Көрүү жөндөмү чектелгендер үчүн экран окугуч программалар;
- Ар түрдүү тилдерде автоматтык котормо кызматтары.

UNESCO (2022) маалыматы боюнча, инклюзивдүү МКТ чечимдери билим алууга катышуу деңгээлин 40%га чейин жогорулатат.

STEAM жана МКТнын байланышы

Билим берүүнүн заманбап тенденцияларынын бири — STEAM (Science, Technology, Engineering, Arts, Mathematics) билим берүү моделинин өнүгүшү. Бул модель МКТ менен тыгыз байланышта жана төмөнкүдөй артыкчылыктарды берет:

- Окуучуларды логикалык ой жүгүртүүгө жана маселени чыгармачылык менен чечүүгө үйрөтөт;
- МКТ аркылуу долбоордук иштерди аткарууга мүмкүнчүлүк түзөт;
- Практикалык көндүмдөрдү өнүктүрөт (мисалы, программалоо, графикалык дизайн ж.б.).

STEAM билим берүүнүн негизинде өнүккөн өлкөлөрдө (мисалы, Сингапур, Финляндия) билим берүү глобалдык деңгээлде жогору бааланат.

Кырдаалдык билим берүү жана МКТ

COVID-19 пандемиясы билим берүүнүн туруктуулугунун маанисин ачык көрсөттү. Пандемия учурунда МКТ билим берүүнүн үзгүлтүксүздүгүн сактап калууда негизги курал болду. Бул процессте төмөнкүлөр активдүү колдонулду:

- Zoom, Microsoft Teams, Google Meet — онлайн сабактар;
- WhatsApp, Telegram — байланыш жана тапшырмаларды берүү;
- YouTube каналдары жана жергиликтүү санариптик платформалар — видео сабактар.

World Bank (2021) маалыматы боюнча, санариптик билим берүү ресурстарын колдонгон өлкөлөр пандемия маалында билим берүүнү 60–90% деңгээлде уланта алган.

МКТга негизделген билим берүүнүн келечеги

Билим берүү тармагында келечектеги негизги технологиялар:

- Жасалма интеллект (AI) — окуучулардын ийгилигин алдын ала анализдөөгө жана аларга ылайык программа түзүүгө;
- Виртуалдык жана кеңейтилген чындык (VR/AR) — практикалык жана лабораториялык сабактарды симуляция кылууга;
- Blockchain технологиясы — дипломдорду, окуу жетишкендиктерин коопсуз жана өзгөртүлгүс формада сактоого;
- Интернет буюмдар (IoT) — акылдуу класстарды түзүүгө мүмкүнчүлүк берет.

Бул технологиялар билим берүүнү кыйла натыйжалуу, жеткиликтүү жана инклюзивдүү кылат.

Изилдөөнүн максаты

Билим берүүдө маалыматтык-коммуникациялык технологиялардын (МКТ) колдонулушунун деңгээлин аныктап, алардын билим берүүнүн туруктуу өнүгүүсүнө тийгизген таасирин баалоо.

Изилдөөнүн предмети

Окуучулардын жана мугалимдердин МКТны колдонуудагы көндүмдөрү, технологиялардын колдонулушу жана алардын билим берүүдөгү натыйжалуулугу.

Изилдөөнүн объектиси

Ош шаарындагы орто мектептердин мугалимдери жана жогорку класстын (9–11) окуучулары.

Изилдөө методу

- Онлайн сурамжылоо (Google Forms аркылуу);
- Интервью (айрым мугалимдер менен);
- Анализ жана салыштыруу.

Сурамжылоого катышкандар

Жалпы катышуучулар: 120 адам**.** Мугалимдер: 40**.** Окуучулар: 80

Категория	"Күн сайын колдонобуз"	"Ара-санда колдонобуз"	"Колдонбойбуз"
Мугалимдер	62%	28%	10%
Окуучулар	85%	12%	3%

1-сүрөт.

Жыйынтык: Окуучулардын көпчүлүгү күн сайын смартфон, ноутбук же планшет аркылуу окуу максатында МКТны колдонушат. Мугалимдер арасында бул көрсөткүч салыштырмалуу төмөн (1-сүрөт).

Колдонулган технологиялар

- Google Classroom – 45%
- Zoom – 38%
- WhatsApp/Telegram – 82%
- Электрондук китептер (PDF, ePub) – 54%
- YouTube (билим берүүчү видеолор үчүн) – 76%

Анализ жана интерпретация. МКТ билим берүүнүн кеңири жеткиликтүүлүгүн камсыз кылууда чоң роль ойнойт, бирок инфраструктуралык жана адам ресурсу маселелери негизги тоскоолдуктар бойдон калууда. Окуучулар технологияга ыкчам ыңгайлашууда, бирок мугалимдерди кошумча окутуу жана колдоо муктаждыгы бар. МКТны колдонуу билим алууга өз алдынча үйрөнүү жөндөмүн жогорулатат, бул билим берүүнүн туруктуу өнүгүүсүнүн негизги шарттарынын бири болуп саналат.

Кемчиликтер:

Изилдөөнүн жүрүшүндө жана сурамжылоонун негизинде төмөнкү негизги кемчиликтер аныкталды:

1. Инфраструктуранын жетишсиздиги. Аймактардагы көптөгөн мектептерде интернет байланышы начар же таптакыр жок. Компьютер, интерактивдүү доска, проектор сыяктуу МКТ жабдуулары бардык мектептерде бирдей жеткиликтүү эмес.

2. Мугалимдердин МКТ боюнча квалификациясынын төмөндүгү. Кээ бир мугалимдер технологияларды колдонууда өзүн ишенимсиз сезишет. Бул алардын сабакты эффективдүү жүргүзүүсүнө тоскоолдук жаратат.

Сурамжылоого катышкан мугалимдердин 41%ы бул көйгөйдү баса белгилешти.

3. Окуучулардагы санариптик теңсиздик. Айрым окуучуларда смартфон, планшет же ноутбук сыяктуу шаймандар жок. Бул аларды онлайн билимге толук катышуудан четтетет.

4. Сапаттуу окуу мазмунунун жетишсиздиги. Кыргыз тилиндеги жана улуттук контекстке ылайыкташкан онлайн билим берүү материалдары аз. Бар ресурстардын көбү чет тилдерде, же актуалдуулугу төмөн.

5. Онлайн билим берүүгө болгон ата-энелердин терс көз карашы. Айрым ата-энелер онлайн окутууну “реалдуу билим берүүгө тете эмес” деп эсептешет. Бул билим берүү процесси үчүн социалдык тоскоолдуктарды жаратат.

Сунуштар:

Жогорудагы көйгөйлөрдү чечүү жана МКТнын билим берүүдөгү натыйжалуулугун арттыруу үчүн төмөнкү сунуштар берилип жатат:

1. Аймактардагы мектептерди техникалык жактан жабдуу. Мамлекеттик деңгээлде атайын инвестициялык программалар ишке ашырылып, бардык мектептерге интернет, компьютердик класс, интерактивдүү шаймандар жеткиликтүү болушу керек.

2. Мугалимдер үчүн үзгүлтүксүз окутуу курстарын уюштуруу. Мугалимдерди МКТ боюнча акысыз онлайн жана оффлайн курстар менен камсыздап, алардын ишенимдүү жана натыйжалуу иштөөсүнө шарт түзүү зарыл.

3. Кыргыз тилиндеги сапаттуу санариптик окуу мазмунун иштеп чыгуу. Жогорку окуу жайлар, билим берүү министрлиги жана IT адистердин кызматташуусу менен локалдуу онлайн окуу платформаларды түзүү керек.

4. Социалдык теңсиздикти жоюу үчүн атайын стипендиялар жана гранттар. Аз камсыз болгон үй-бүлөлөрдүн балдарына билим берүү шаймандарын сатып алуу үчүн атайын көмөктөшүү программалары иштелип чыгышы керек.

Корутунду:

Изилдөө көрсөткөндөй, маалыматтык-коммуникациялык технологиялар билим берүүнүн сапатын жакшыртуу жана туруктуу өнүгүүгө жетишүү үчүн күчтүү курал болуп саналат. Алар билимге жеткиликтүүлүктү кеңейтип, окутуунун ыкмаларын жаңылап, окуучулардын өз алдынча билим алуу мүмкүнчүлүгүн күчөтөт. Бирок бул потенциалды толук ишке ашыруу үчүн системалуу реформалар, стратегиялык инвестициялар жана педагогикалык жамааттар менен коомчулуктун активдүү колдоосу зарыл.

Кыргызстандын билим берүү системасы бул багытта олуттуу кадамдарды жасап баштады, бирок ийгиликке жетүү үчүн бардык деңгээлдерде — мамлекеттик саясаттан тартып мектептеги сабакка чейин — максаттуу, далилдүү жана уюшкан аракеттер талап кылынат.

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СОВРЕМЕННЫЕ СТРАТЕГИИ ПРОДВИЖЕНИЯ ТОВАРНОГО ЗНАКА В ЦИФРОВУЮ ЭПОХУ

Аннотация. *В статье рассмотрены современные подходы к продвижению товарного знака как нематериального актива в условиях цифровой трансформации коммуникационной среды. Обоснована роль знака как ключевого инструмента визуальной идентичности и стратегического ресурса бренда. На основе системного анализа определены наиболее эффективные методы и каналы его продвижения, включая цифровые технологии, инфлюенсер-маркетинг и персонализированные коммуникации.*

Ключевые слова: *товарный знак, брендинг, цифровой маркетинг, визуальная коммуникация, индивидуализация, инфлюенсеры, персонализация.*

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MODERN TRADEMARK PROMOTION STRATEGIES IN THE DIGITAL AGE

Abstract. *The article discusses modern approaches to promoting a trademark as an intangible asset in the context of digital transformation of the communication environment. The role of the trademark as a key element of visual identity and a strategic brand resource is substantiated. Based on a systemic analysis, the most effective methods and channels for trademark promotion are identified, including digital technologies, influencer marketing, and personalized communications.*

Keywords: *trademark, branding, digital marketing, visual communication, individualization, influencers, personalization.*

Введение. В эпоху цифровизации и высококонкурентного информационного пространства товарный знак трансформируется из средства

правовой защиты в мощный маркетинговый и репутационный инструмент. Он становится отправной точкой коммуникации между брендом и потребителем, формируя визуальный образ, отражающий ценности, стиль и идентичность компании. Визуальная составляющая бренда сегодня является неотъемлемой частью маркетинговой стратегии, определяющей поведение и предпочтения целевой аудитории. По мнению Романова С. С., товарный знак в современных условиях выполняет не только идентификационную функцию, но и символизирует сложную систему смыслов, формирующуюся в процессе коммуникации между производителем и потребителем.

Методы. В рамках исследования использовались методы системного, сравнительного и контент-анализа, а также методологические подходы, заимствованные из смежных областей — брендинга, визуальных коммуникаций и поведенческого маркетинга. Анализировались публикации российских учёных, в том числе труды Мазуриной Т. А. (2014), Старова С. А., Алкановой О. Н. и Молчанова Н. Н. (2012), материалы профессиональных изданий, практические кейсы из корпоративной среды, а также стратегии продвижения крупных и нишевых брендов в цифровых каналах. На основе изученного были обобщены подходы, позволяющие эффективно продвигать товарный знак в условиях медиаперегрузки. Исследование имело качественный характер, опираясь на анализ вторичных данных и экспертных заключений.

Результаты. Анализ показал, что продвижение товарного знака сегодня требует комплексного подхода с интеграцией цифровых и традиционных каналов коммуникации. В частности, контент-маркетинг способствует не только визуальному узнаваемому присутствию знака, но и формирует доверительный контекст. По мнению Година А. А., именно содержание, наполненное смыслом, позволяет бренду выстраивать устойчивые отношения с потребителем в условиях избыточного информационного шума.

SEO (поисковая оптимизация) усиливает органическое присутствие бренда в цифровой среде, способствует ассоциативному закреплению знака в сознании пользователей, особенно при первых контактах с брендом. Ершова Е. Ю. подчёркивает, что включение товарного знака в архитектуру цифровых площадок позволяет формировать устойчивые когнитивные связи.

Маркетинг в социальных сетях (SMM) обеспечивает непрерывное визуальное присутствие и живой диалог между брендом и аудиторией. Годин А. в более поздней работе отмечает, что в цифровом пространстве товарный знак превращается в активный элемент визуального и смыслового обмена, который должен быть адаптирован к различным платформам и форматам контента.

Кроме того, важным инструментом становится инфлюенсер-маркетинг, в котором знак включается в повседневную визуальную среду через медиаторов, обладающих доверием аудитории. Кудашов В. И. и Рябоконь А. И. подчёркивают, что знаковое присутствие в контенте инфлюенсеров

усиливает восприятие бренда как социально значимого и эмоционально близкого.

Отдельное внимание в исследовании уделено офлайн-коммуникациям: упаковке, выставочным пространствам, брендированным зонам. По данным Ершовой Е. Ю., визуально-тактильное взаимодействие с товарным знаком укрепляет доверие к бренду и усиливает эмоциональный отклик.

Также исследование показало высокую значимость персонализации — пользовательские настройки, таргетинг, адаптация интерфейсов усиливают эмоциональную значимость знака как части индивидуального пользовательского опыта. Годин А. А. указывает, что в условиях Big Data и точного маркетинга знак должен быть узнаваемым, но гибким и вариативным в зависимости от ситуации.

Заключение. Таким образом, товарный знак в современной цифровой культуре выполняет не только функцию визуальной идентификации, но и служит медиатором смыслов, ценностей и эмоционального контакта. Его продвижение требует гибкости, кроссплатформенной адаптации, органичной интеграции в медиаконтент и соблюдения целостности визуального языка бренда. Полученные результаты могут быть применены при разработке комплексных стратегий брендов в условиях медиаперенасыщения и возрастающей роли персонализированных коммуникаций. Предложенные выводы способствуют дальнейшему углублению научных представлений о механизмах продвижения знаковых элементов бренда и могут быть использованы в практической деятельности специалистов в области маркетинга и коммуникаций.

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КОНТЕНТ-СТРАТЕГИЯ КАК ОСНОВА SMM-ПРОДВИЖЕНИЯ МУЛЬТИБРЕНДОВОЙ ПЛАТФОРМЫ

Аннотация. *В статье анализируются принципы разработки и реализации контент-стратегии как ключевого инструмента продвижения бренда в цифровой среде. Особое внимание уделяется специфике коммуникации мультибрендовых платформ, функционирующих в социальных сетях. Рассматриваются базовые элементы контент-плана, а также подходы к визуализации и стилистической унификации представленных брендов. Подчёркивается, что контент в SMM выполняет не вспомогательную, а системообразующую функцию, влияющую на узнаваемость, доверие и вовлечённость аудитории. Представленные выводы могут быть полезны как в научной, так и в практической сфере брендинга и цифрового маркетинга.*

Ключевые слова: *контент-стратегия, социальные сети, брендинг, визуальная идентичность, маркетинг, вовлечение, мультибрендовая платформа.*

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CONTENT STRATEGY AS THE BASIS FOR SMM PROMOTION OF A MULTI-BRAND PLATFORM

Abstract. *The article analyzes the principles of content strategy development and implementation as a key tool for brand promotion in the digital environment. Special emphasis is placed on the specifics of communication in multi-brand platforms operating in social media. The paper examines core elements of content planning and approaches to visual and stylistic integration of represented brands. It is emphasized that content in SMM is not an auxiliary function, but a system-forming one that affects recognition, trust, and audience engagement. The presented findings may be useful in both academic research and applied branding practices.*

Keywords: *content strategy, social media, branding, visual identity, marketing, engagement, multi-brand platform.*

Введение. Цифровая трансформация коммуникационной среды радикально изменила методы построения брендов и продвижения их идентичности. Особую актуальность в этом контексте приобретает контент-стратегия — системный подход к планированию и публикации материалов в социальных сетях, направленный на поддержание постоянного присутствия бренда в цифровом поле. В условиях информационной перегрузки и высокой конкуренции за внимание пользователей важно не просто присутствовать в медиапространстве, но и выстраивать осмысленную, визуально устойчивую и эмоционально насыщенную коммуникацию. Это особенно важно для мультибрендовых платформ, где в едином визуальном и смысловом контексте необходимо представить сразу несколько брендов, сохранив при этом их индивидуальность и уникальность.

Контент, выступающий в роли посредника между платформой и потребителем, становится главным каналом трансляции ценностей и смыслов бренда. Он выполняет не только информативную и развлекательную функцию, но и обеспечивает формирование доверия, узнаваемости и приверженности аудитории. Как отмечают современные исследователи, успех коммуникации в цифровой среде всё чаще определяется не объемом рекламного бюджета, а способностью бренда быть интересным, релевантным и человечным в глазах пользователя.

Методы. Исследование основано на применении комплекса методов качественного анализа, включая структурный, контент- и сравнительный анализ. В качестве теоретической базы использовались научные труды российских и зарубежных авторов, освещающих вопросы контент-маркетинга, визуальных коммуникаций, поведенческого маркетинга и SMM. Анализу подверглись публикации, содержащие описания успешных стратегий цифрового продвижения, а также кейсы, иллюстрирующие специфические практики мультибрендовых платформ в социальных сетях.

Одним из центральных методологических подходов выступает интерпретация контент-стратегии как интегральной части брендинга, что позволило рассматривать её не изолированно, а в рамках широкой системы коммуникации бренда с потребителем. Такой подход опирается на исследования Жильцова Д. А., Кабаненко М. Н., Лужновой Н. В., а также на практические материалы, опубликованные в специализированных отраслевых изданиях, включая «Бизнес информ», «Маркетинг и логистика» и др.

Для обоснования специфики мультибрендовых решений были изучены действующие аккаунты брендов в Telegram, Instagram и «ВКонтакте», а также проведён сравнительный анализ визуальных и смысловых паттернов, используемых в контенте. Были проанализированы различные формы взаимодействия с аудиторией: сторис, посты, опросы, интерактивные форматы, UGC и креативные рубрики. Это позволило установить, каким образом контент не только доносит информацию, но и структурирует пользовательский опыт, становясь элементом смысловой навигации внутри платформы.

Также применялись элементы эмпирического наблюдения: мониторинг темпа публикаций, активности подписчиков, характера комментариев и частоты вовлечения. Такой подход позволил выявить закономерности в реакции аудитории на различные типы контента и сформулировать гипотезы о наиболее эффективных стратегиях.

Результаты. Анализ полученных данных позволил выделить ключевые особенности разработки и реализации контент-стратегии в рамках мультибрендовой платформы. Прежде всего, следует подчеркнуть, что контент выполняет в SMM не только эстетическую или информационную функцию, но и стратегическую: он становится инструментом управления вниманием, смысловым полем и эмоциональной вовлечённостью пользователей.

Для мультибрендовых платформ одной из приоритетных задач является соблюдение баланса между целостностью визуального образа всей платформы и индивидуальностью каждого бренда, представленного в её рамках. Это предполагает наличие единой стилистической матрицы: общих цветовых кодов, версточных принципов, типографики, а также унифицированной системы подачи информации. При этом отдельным брендам предоставляется пространство для проявления собственных тонов коммуникации, уникального голоса и эстетики. Такая двойственная модель позволяет платформе быть узнаваемой, а её составляющим — сохранять идентичность.

Особую роль в системе SMM-работы играет контент-план. Он должен учитывать не только хронологию и частотность публикаций, но и стратегические цели: повышение охвата, рост вовлеченности, узнаваемость отдельных брендов, лояльность подписчиков. Практика показывает, что наиболее эффективными оказываются гибкие сетки публикаций, в которых сочетаются заранее спланированные рубрики с возможностью ситуативных включений — например, реагирования на тренды, мемы, события в инфополе.

Важной частью стратегии является сегментация аудитории. Мультибрендовая платформа, как правило, работает сразу с несколькими целевыми группами, отличающимися по возрасту, стилю, ценностям и потребительским установкам. Это требует выверенного подхода к подбору типов контента. По классификации, представленной Лужновой Н. В. и Курбановым Ш. М., можно выделить шесть основных типов: информационный, развлекательный, вовлекающий, пользовательский (UGC), вирусный и продающий. Каждый из них решает специфическую задачу: от простого информирования до активного стимулирования продаж или формирования эмоциональной привязанности.

Например, развлекательный контент снижает коммуникационную дистанцию и способствует формированию образа «живого» бренда, близкого по духу аудитории. Вовлекающий контент — опросы, челленджи, игры — активизирует подписчиков и повышает шансы на органическое распространение материалов. Пользовательский контент (UGC) усиливает

эффект доверия и вовлечённости, особенно если платформа репостит фотографии клиентов, демонстрирует их отзывы или даёт им пространство для самовыражения.

Дополнительной особенностью мультибрендовой платформы становится необходимость синхронизации между внутренними коммуникациями разных команд, курирующих отдельные бренды, и центральной SMM-стратегией. На практике это выражается в необходимости создания единой базы визуальных и текстовых шаблонов, рекомендаций по стилю, а также внутреннего регламента публикаций.

Технические аспекты также оказывают влияние на эффективность стратегии. В частности, для Instagram важны визуальные константы, ритмичность выкладки и сторителлинг, а в Telegram — чистота формулировок, работа с мемами и локальными кодами. Каждая платформа требует индивидуального подхода, при этом поддерживая общую идеологию платформы.

Не менее важным становится анализ эффективности контента. Классические метрики — ER (Engagement Rate), охваты, глубина просмотров, CTR, реакция на сторис — позволяют не только фиксировать успех отдельных публикаций, но и корректировать стратегию в реальном времени. Практика показывает, что платформы, включающие постоянный мониторинг откликов, имеют более устойчивые показатели роста и стабильности вовлечённости.

Контент-план также должен учитывать сезонные и ситуационные циклы. Например, в период осенних распродаж акцент смещается на продающий контент, в то время как в межсезонье преобладают имиджевые публикации и «разогревающий» контент. Интеграция таких циклов в контентную стратегию позволяет достигать максимального эффекта от коммуникаций.

Следует также упомянуть о важности обратной связи. Пользователи цифровой среды хотят чувствовать, что их голос услышан. Поэтому комментарии, реакции, вопросы не должны игнорироваться — напротив, они становятся важной частью контентной работы. Вовлечение команды в диалог, персонализированные ответы, реакция на упоминания — всё это укрепляет эмоциональную связь между брендом и аудиторией.

Заключение. Анализ практики реализации контент-стратегии в рамках мультибрендовых платформ позволяет сделать вывод о том, что именно системный подход к работе с контентом обеспечивает не только узнаваемость, но и устойчивую коммуникацию между брендом и его целевой аудиторией. В условиях постоянной конкуренции за внимание пользователей, контент становится не просто формой подачи информации, а точкой соприкосновения между смыслами, визуальной эстетикой и пользовательским опытом. Его грамотная структура, соответствие целям бренда и умение выстраивать живой диалог позволяют платформе не растворяться в медиапотоке, а формировать собственное, узнаваемое и ценностно насыщенное пространство.

В контексте мультибрендовых платформ особую значимость приобретает выстраивание единого визуально-смыслового поля, в рамках которого каждая торговая единица может сохранять свою идентичность. Контент-план, построенный на основе анализа целевых аудиторий, платформенных алгоритмов и визуальной логики, позволяет создать устойчивую архитектуру взаимодействия. Постоянный мониторинг откликов, гибкость в реагировании на инфоповоды и опора на качественную аналитику формируют предпосылки для успешного развития платформы в условиях цифровой конкуренции.

Таким образом, контент-стратегия выступает не только инструментом маркетинга, но и механизмом управления вниманием, идентичностью и эмоциональной лояльностью пользователей. Полученные в рамках исследования результаты подтверждают актуальность и значимость системного подхода к SMM-продвижению в условиях мультибрендового присутствия и могут быть использованы при разработке практических рекомендаций для брендов, работающих в цифровом пространстве.

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O‘ZBEKISTON RESPUBLIKASIDA IMKONIYATI CHEKLANGAN YOSHLARNI ISH BILAN TA‘MINLASH MUAMMOLARI

Annotasiya: *Maqolada nogironligi bo‘lgan yoshlarni - O‘zbekiston oliy o‘quv yurtlari bitiruvchilarini mehnat bozorida ishga joylashtirish muammosi o‘rganiladi. Muallif zamonaviy muammolarni, nogironligi bo‘lgan shaxlarni ish bilan ta’minlash sohasidagi mavjud vaziyatni tahlil qilish, nogironligi bo‘lgan universitet bitiruvchilari ish qidirishda duch keladigan to‘siqlar va qiyinchiliklarni tadqiq qiladi. Nogironligi bo‘lgan shaxslarni ishga joylashtirishga qaratilgan normativ-huquqiy hujjatlardagi imtiyozlar va preferensiyalar alohida tahlil qilinadi. O‘zbekiston Respublikasida nogironligi bo‘lgan bitiruvchi yoshlarni ish bilan ta’minlashni yaxshilash bo‘yicha tavsiyalar ishlab chiqilgan.*

Kalit so‘zlar: *Mehnat bozori, bandlik, nogironligi bo‘lgan shaxslar, inklyuziv ta’lim, korporativ ijtimoiy javobgarlik, ish beruvchi.*

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PROBLEMS OF EMPLOYMENT OF YOUTH WITH DISABILITIES IN THE REPUBLIC OF UZBEKISTAN

Abstract: *The article examines the problem of employment of youth with disabilities - graduates of higher educational institutions of Uzbekistan in the labor market. The author has studied modern problems, analyzed the current situation in the field of employment of people with disabilities, barriers and difficulties faced by university graduates with disabilities when looking for work. The benefits and preferences in regulatory legal acts aimed at the employment of persons with disabilities are analyzed separately. Recommendations have been developed to improve the employment of young graduates with disabilities in the Republic of Uzbekistan.*

Keywords: *Labor market, employment, persons with disabilities, inclusive education, corporate social responsibility, employer.*

Kirish. Yoshlarni ish bilan ta’minlash, shu jumladan mehnat bozoriga endigina kirib kelgan oliy ta’lim muassasalari bitiruvchilarini ish bilan ta’minlashga ko‘maklashish davlat siyosatining ustuvor yo‘nalishlaridan biri hisoblanadi. Mehnat bozoriga nazar tashlaydigan bo‘lsak, odatda yoshlar mehnat bozorining raqobatbardoshligi past qismini ifoda etadi, ishsizlik borasida to‘xtaladigan bo‘lsak, yoshlar o‘rtasida ishsizlik darajasi katta yoshdagilarga nisbatan yuqori ekanligiga guvoh bo‘lamiz [1]. Mutaxassislarning fikricha, O‘zbekiston yoshlarining qisqa va uzoq muddatli istiqbolda mehnat bozoriga integratsiyalashuvini yaxshilash bo‘yicha kompleks chora-tadbirlar va mexanizmlarni ishlab chiqish milliy va mahalliy darajada dolzarb vazifa hisoblanadi. Mutaxassislik bo‘yicha ish tajribasi va malakaning yetarli emasligi mehnat bozorida bitiruvchilarga talab pastligining asosiy sabablaridan biri hisoblanadi, bu esa, o‘z navbatida ularning bo‘sh ish o‘rinlari uchun kurash borasida raqobatbardoshligini pasaytiradi. Shu bilan bir qatorda, bitiruvchilar qanday qilib to‘g‘ri ish qidirish, o‘zlarini ish beruvchilarga mohirona taqdimot qilishi va ishga joylashgandan so‘ng, ish joyida muvaffaqiyatli ishlab ketishni ko‘pincha uddalay olmasliklari bois, ishga joylashish jarayonida turli qiyinchiliklarga duch keladilar.

Tadqiqot usullari. Tadqiqot davomida muallif bir qator umume’tirof etilgan usullarga, shu jumladan dialektik usul, ilmiy abstraktsiya, induksiya va deduksiya, kuzatish, qiyosiy tahlil, Qonunchilik bazasini o‘rganish, shuningdek ilmiy adabiyotlar va davriy nashrlarni tahlil qilishga tayangan.

Tahlil va natijalar. Nogiron va salomatligida nuqsonlar mavjud bitiruvchi yoshlar mehnat bozoriga kirib kelayotgan bitiruvchilarning eng zaif toifalaridan biri sanaladi [2]. Bir qator mualliflarning tadqiqotlarida [3] ta’kidlanishicha, ish tajribasi yo‘q yoki yetarlicha ish stajiga ega bo‘lmagan bitiruvchilar mehnat bozorining eng zaif ishtirokchilari hisoblanadilar va ish axtaruvchining salomatligida har qanday cheklovlarning mavjudligi, ularning ishga joylashish borasida shusiz ham qiyin vaziyatini yanada murakkablashtiradi. Buni nogiron bitiruvchilar, shuningdek mutaxassislar va ish beruvchilar o‘rtasida o‘tkazilgan ko‘plab so‘rov va kuzatishlar natijalari ham yaqqol tasdiqlaydi.

Nogiron yoshlar, shu jumladan kasb-hunar ta’limi tashkilotlari va oliy ta’lim muassasasi bitiruvchilarini ish bilan ta’minlash muammosi har qachongidek, dolzarb va qiyin bo‘lib qolaveradi, bu esa ham davlat organlari ham butun jamiyat tomonidan alohida e’tibor qaratishni talab qiladi.

O‘zbekiston Respublikasi Oliy ta’lim, fan va innovatsiyalar vazirligining ma’lumotlariga ko‘ra, Oliy ta’lim muassasalarida tahsil olayotgan imkoniyatlari cheklangan (nogiron) talabalar 6120 nafarni, shundan 2877 nafari talaba-qizlarni tashkil qiladi. 2021/2022 o‘quv yilida respublika oliy ta’lim muassasalarini jami 660 nafar I-II-guruh nogironligi bo‘lgan talabalar bitirgan. 2022 yil noyabr holatiga nogironligi bo‘lgan bitiruvchilarning jami 301 nafari (246 nafari davlat tashkilotlarida, 55 nafari xususiy sektorda) mehnat faoliyati bilan shug’ullanmoqda.

O‘zbekiston Respublikasi Prezidentining 27.02.2023 yildagi PQ-74-son “Nogironligi bo‘lgan shaxslarni qo‘llab-quvvatlash tizimini takomillashtirishga doir qo‘shimcha chora-tadbirlar to‘g‘risida”gi [4], 01.06.2023 yildagi PF-82-son “Aholiga sifatli ijtimoiy xizmat va yordam ko‘rsatish hamda uning samarali nazorat tizimini yo‘lga qo‘yish bo‘yicha kompleks chora-tadbirlar to‘g‘risida” gi [5] Farmonlari, O‘zbekiston Respublikasining yangi tahrirda qabul qilingan Mehnat kodeksi va shu kabi bir qator me’yoriy - huquqiy hujjatlar asosida davlat nogironlarni, shu jumladan yaqinda o‘rta maxsus kasb-hunar va oliy ma’lumot olgan yoshlarning bandligini ta’minlash va ularni ijtimoiy jihatdan qo‘llab-quvvatlash borasida chora-tadbirlarni amalga oshirib kelmoqda.

Shu bilan bir qatorda, yangi tahrirda qabul qilingan O‘zbekiston Respublikasining Konstitutsiyasida O‘zbekistonning ijtimoiy davlat sifatida e’tirof etilishi, shuningdek, Konstitutsiyaning 57-moddasida “... davlat nogironligi bo‘lgan shaxslarning ijtimoiy, iqtisodiy va madaniy sohalar ob’ektlari va xizmatlaridan to‘laqonli foydalanishi uchun shart-sharoitlar yaratadi, ularning ishga joylashishiga, ta’lim olishiga ko‘maklashadi...” - deb belgilab qo‘yilishi O‘zbekistonda nogironligi bo‘lgan shaxslarni qo‘llab-quvvatlash davlat siyosatining muhim yo‘nalishlaridan biri ekanligini ko‘rsatadi.

Nogiron yoshlarni mehnat faoliyati bilan shug’ullanuvchilari tarkibiga kiritish ularning kasbiy reabilitatsiyasi va jamiyatga integratsiyalashuvi samaradorligining asosiy ko‘rsatkichi ekanligini ta’kidlash muhimdir. Bu nafaqat muhim ijtimoiy, balki iqtisodiy samaraga ham ega. Shu sabablarga ko‘ra, birinchi marta ish izlayotgan yosh nogironlarni ish bilan ta’minlash mahalliy davlat hokimiyati idoralarining ustuvor vazifasi bo‘lishi lozim.

Jamiyatga kasbiy jihatdan integratsiyalashuv borasida aynan mazkur toifadagi yoshlar ish topishda eng katta muammolarga duch kelishadi. Inklyuziv mehnat bozorida ish topish borasidagi qiyinchiliklarning boisi, ularning ish joyiga jismoniy kirib-chiqishlari va muayyan mehnat funktsiyalarini bajarishlarini qiyinlashtiruvchi tana funktsiyalarining birgina jiddiy buzilishi emas, balki nogironlardagi ruhiy nuqsonlar hamdir. Nogiron yoshlarning mehnat bozoriga kirishdagi ijtimoiy tajribasining past darajasi ularga nafaqat kasbiy mahorat, balki psixologik tayyorgarlik va moslashish qobiliyatlari jihatidan ham raqobatbardosh bo‘lishga imkon bermaydi.

Ushbu jihatlar shuningdek, nogironlarning kasbiy va mehnat imkoniyatlari borasida yetarlicha tasavvurga ega bo‘lmagan ish beruvchilarning mehnat qobiliyati borasida u yoki bu ko‘rinishdagi cheklovlarga ega bo‘lmagan fuqarolarni ishga yollashni afzal ko‘rishlari bilan yanada chigallashadi, chunki nogironlarni yollashda ko‘pincha ish jarayonini ularning imkoniyatlariga moslashtirish, maxsus mehnat sharoitlarini yaratish lozim bo‘ladi, bu esa katta moliyaviy xarajatlarni talab qiladi. Nogironligi mavjud shaxslarning kasbiy faoliyat bilan shug’ullanish borasida motivatsiyasining pastligi, ish axtarishdagi passivlikning yuqori darajasi nogiron bitiruvchilarni ishga jalb qilishning past darajasini aks ettiruvchi muhim omillardan sanaladi.

Nogiron yoshlarga ko‘mak ko‘rsatish va ularni qo‘llab-quvvatlash uch muhim yo‘nalishni ko‘zda tutadi: **birinchidan**, mos ish joyini topishda yordam berish; **ikkinchidan**, nogironga o‘z vazifalarini bajarishga va professional moslashishga imkon beradigan zarur shart-sharoitlarni yaratish; **uchinchidan**, zarur holatlarda nogironga uydan ish joyigacha, shuningdek ishxona hududida va ishdan uyga qaytishgacha bo‘lgan harakatlanish rejasini tuzishda ko‘mak berish.

Ish stajiga ega bo‘lmagan yosh bitiruvchilarni ish bilan ta’minlash samaradorligi nuqtai nazaridan bandlik xizmatining eng samarali yo‘nalishi - bu ular uchun korxonalarda amaliyot va stajirovka o‘tashni tashkil etishdir. Ishga joylashishni qo‘llab-quvvatlash, dastlabki ish tajribasiga ega bo‘lish va ijtimoiy-kasbiy muhitga moslashishning ushbu shakli nogiron talabalar uchun ayniqsa muhimdir. Amaliyot shuni ko‘rsatadiki, bu ularning mehnat bozorida raqobatbardoshligini sezilarli darajada oshiradi, keyingi ish bilan ta’minlash imkoniyatlarini kengaytiradi.

Nogironligi mavjud barcha shaxslar ochiq, inklyuziv va qulay bo‘lishi lozim bo‘lgan mehnat bozorida munosib ish topish uchun umumiy texnik va kasb-hunarga yo‘naltirish dasturlari, bandlik xizmatlari, shuningdek kasb-hunar va uzluksiz ta’limdan samarali foydalanish borasida teng huquq va imkoniyatlarga ega bo‘lishlari lozim.[6]

Nogironlar ixtisoslashtirilgan va umumiy kasb-hunar ta’limi, yo‘naltiruvchi dasturlar va bandlik xizmatlaridan teng foydalanish imkoniyatlariga ega bo‘lishlari lozim. Ochiq mehnat bozoridagi mavjud to‘siqlardan tashqari, ta’lim va o‘qitishning past darajasi nogironlarning munosib ish bilan ta’minlash imkoniyatlarini cheklaydi.

Qonunchilikka muvofiq, davlat nogironlarga inklyuziv ta’lim olish imkoniyatini kafolatlashiga qaramay, ularning aksariyati hali ham umumiy ta’lim dasturlari standartlari yoki talablariga javob bermaydigan alohidalashtirilgan muassasalarda yoki uyda ta’lim olishadi. Buning natijasi o‘laroq, o‘qishni tamomlagandan so‘ng, katta yoshdagi nogironlar ochiq mehnat bozoriga samarali qo‘shilish borasida zarur bo‘lgan yuqori sifatli akademik, ijtimoiy va kasbiy ko‘nikmalarga ega bo‘lmay qolishmoqda.

Mavjud ixtisoslashtirilgan kasb-hunar maktablari eskirgan o‘quv dasturlari asosida o‘qitishni amalga oshirib kelishmoqda, shu bilan birga, asosiy kasb-hunar ta’limi dasturlari esa nogironlar uchun inklyuziv yoki qulay emas.

Nogironlar munosib mehnatga ega bo‘lishlari va har qanday tashqi xatarlardan himoyalanishlari, shuningdek, ish joyida ijtimoiy va iqtisodiy himoyalanganlik imkoniyatlaridan foydalana olishlari lozim. Biroq, ular ish topa olsalar ham, ularning ishi odatda himoyalanmagan, past malakali yoki ish haqi past bo‘ladi. Rasmiy mehnat bozoridagi mavjud to‘siqlar tufayli nogironlar norasmiy bozorda doimiy bo‘lmagan ish topadilar. COVID-19 pandemiyasi va u bilan bog’liq zaruriy karantin choralari norasmiy ish bilan band bo‘lgan nogironlarga jiddiy ta’sir ko‘rsatdi va ular duch keladigan salomatlik va moliyaviy jihatlar bilan bog‘liq xatarlarni yaqqol yuzaga chiqardi.

Nogironlarning manfaatlariga asoslangan bandlik barcha uchun foydali bo‘lgani holda, jamoalar va jamiyatning o‘zaro ijtimoiy hamjihatligini mustahkamlaydi. Buning sabablari sifatida quyidagilarni tilga olib o‘tishimiz mumkin:

- Nogironlarni munosib ishlarga jalb qilish ularning ijtimoiy nafaqalarga bog‘liqligini kamaytirgan holda, ularning mustaqillik darajasini oshiradi va yuqori turmush darajasiga erishishga imkon beradi. Ta’lim singari, mehnat ham jamiyatga qo‘shilish va u tomonidan qadrlanishning eng muhim usullaridan biridir. Ochiq va inklyuziv mehnat bozorida ish bilan ta’minlash orqali nogironlar o‘zlarining kasbiy ko‘nikmalari va bilimlarini qo‘llash orqali o‘z imkoniyatlarini ro‘yobga chiqarishlari, jamiyatdan ajralib qolish xavfidan o‘zlarini himoya qilishlari mumkin;
- Nogironligi mavjud ishchi va xizmatchilarning 73 foizdan 80 foizigacha bo‘lgan qismi uchun maxsus mehnat sharoitlari talab qilinmaydi [7];
- Bundan tashqari, nogironlarni ish bilan ta’minlaydigan korxona va tashkilotlar uchun davlat tomonidan soliq imtiyozlari va preferentsiyalar taqdim etiladi;
- Barcha xodimlarning ehtiyojlarini qondiruvchi va ularning salohyatini to‘liq ro‘yobga chiqarishga imkon beruvchi, inklyuziv va qulay ish o‘rinlarining mavjudligi xususiy korxonalarning yanada jozibador va raqobatbardosh bo‘lishiga xizmat qiladi;
- Ish joylarining inklyuzivlik darajasi korporativ ijtimoiy javobgarlikning ajralmas qismidir. Inklyuziv ish usullari xususiy sektorning barqaror rivojlanishini ta’minlaydi va kompaniyalarga jamiyat ishonchini qozonish, hurmatga sazovor bo‘lish va obro‘sini oshirish imkonini beradi, shu bilan yangi mijozlarni jalb qilish, shuningdek, ijodiy va mas’uliyatli xodimlarni rivojlantirish imkoniyatini yaratadi;
- Nogironlarni ish bilan ta’minlash borasida munosib imkoniyatlarning mavjud emasligi, yoki ularni yaratishga shunchaki e’tibor qaratmaslik nogironlarning ijtimoiy va iqtisodiy jihatdan yanada zaiflashtirishi bilan bir qatorda, jamiyatda iqtisodiy rivojlanish imkoniyatlarini ham pasaytiradi;

Xulosa va takliflar: Imkoniyati cheklangan shaxslarning mehnat bozorida ishtirok etishi va qo‘shilishi borasida ko‘plab institutsional, xulq-atvor va infratuzilma to‘siqlari mavjud. Bu borada mavjud ma’lumotlarni tahlil qilish, quyidagi to‘siqlar mavjudligini ko‘rsatadi: (1) nogironlikni ish bilan ta’minlash imkoniyatini yo‘qotish bilan tenglashtiruvchi, nogironlikni baholashning eskirgan tizimi; (2) ochiq mehnat bozorida nogironlik bo‘yicha keng tarqalgan stigmatizatsiya va kamsitish, shuningdek, nogironligi mavjud ish izlovchilarning huquqiy himoyasi va xabardorligi yo‘qligi; (3) nogironlarni davlat va xususiy sektorda ish bilan ta’minlashda majburiy kvotalarga rioya qilmaslik; (4) mavjud ish joylarining yetishmasligi, (5) nogironlarni ish bilan ta’minlash uchun davlat

tomonidan taqdim etiladigan soliq imtiyozlari va preferentsiyalar to‘g‘risida ish beruvchilarning xabardorlik darajasining pastligi va (6) ish beruvchilarning majburiyatlari borasida qonunchilik talablarining haddan tashqari yuqoriligi.

Bizning fikrimizcha nogironligi mavjud shaxslarning ochiq mehnat bozoriga erkin kirib borishi uchun quyidagi asosiy jihatlar ta’minlanishi lozim:

• Nogironlarning ochiq mehnat bozoriga doimiy kirishini ta’minlash borasida nogironlikni baholash tizimini isloh qilish;

• Mehnat huquqlari to‘g‘risida huquqiy himoya va xabardorlikni kuchaytirish va nogironlik asosida kamsitishni ta’qiqlash;

• Nogironlarni ish bilan ta’minlash kvotalariga rioya etilishini nazorat qilish va ta’minlash;

• Ish beruvchilarni davlat imtiyozlari to‘g‘risida xabardorligini oshirish orqali ish joylarida qulaylik va inklyuzivlikni ta’minlashga undash;

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XALQARO MAKTABLARDA OMMAVIY MADANIYAT VA TA‘LIMDAGI TANQIDIY TAHLILI

Annotatsiya: *Ushbu maqola xalqaro maktablardagi ommaviy madaniyatning ta'lim jarayoniga ta'sirini tanqidiy tahlil qiladi. Globalizatsiya sharoitida ommaviy madaniyatning yoshlar ongiga kirib borishi, ularning qadriyatlari, dunyoqarashi va xulq-atvoriga ta'sir etishi muammolari ko'rib chiqiladi. Maqolada xalqaro maktablarda ommaviy madaniyatning ijobiy va salbiy tomonlari, shuningdek, uning ta'lim mazmuni va metodlariga ta'siri o'rganiladi. Maqola xalqaro maktablarda ommaviy madaniyatning ta'lim jarayoniga ta'sirini chuqur tushunish va uning salbiy oqibatlarini minimallashtirish uchun amaliy tavsiyalar beriladi.*
Kalit so‘zlar*: Xalqaro maktablar, ommaviy madaniyat, ta'lim, tanqidiy tahlil, globallashuv, yoshlar, qadriyatlar, dunyoqarash, xulq-atvor, o'qituvchilar*

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CRITICAL ANALYSIS OF POPULAR CULTURE AND EDUCATION IN INTERNATIONAL SCHOOLS

Abstract*: This article critically analyzes the impact of popular culture on the educational process in international schools. It examines the penetration of popular culture into the consciousness of youth in the context of globalization, exploring its effects on their values, worldviews, and behaviors. The study investigates both the positive and negative aspects of popular culture in international schools, as well as its influence on educational content and methodologies. The article provides a comprehensive understanding of the role of popular culture in the educational process and offers practical recommendations for minimizing its adverse effects.*
Keywords: *International schools, popular culture, education, critical analysis, globalization, youth, values, worldview, behavior, educators*

Kirish: Ta’lim sohasida olib borilayotgan islohotlarni chuqurlashtirish, ta’lim tashkilotlari faoliyatini ilg‘or xorijiy amaliyotlar asosida tashkil etish, pedagog kadrlarni tayyorlash tizimini takomillashtirish, nodavlat ta’lim tashkilotlari faoliyatini qo‘shimcha qo‘llab-quvvatlash maqsadida, O‘zbekiston Respublikasi Prezidentining “**TA’LIM SOHASIDAGI ISLOHOTLARNI**

JADALLASHTIRISH BO‘YICHA QO‘SHIMCHA CHORA-TADBIRLAR TO‘G‘RISI” DAGI 02.02.2024 yildagi PQ-54-son qarorida Ta’lim sohasidagi kadrlar salohiyatini oshirish, ta’lim xizmatlari sifatini xalqaro standartlar darajasiga olib chiqish barcha ta’lim tashkilotlarining bosh maqsadidir. [1]Ta’lim tizimini tubdan isloh qilish, xalqaro maktab dasturlari va yutuqlarini tadbiq etish juda zarur jarayonlardan biri. Barcha sohalarda bo‘lgani kabi globallashuv ta’lim tizimiga ham o‘z ta’sirini o‘tkazmasdan qolmadi.

Globallashuv keng qamrovli tushuncha bo'lib, mamlakatlar va mintaqalar o‘rtasida iqtisodiy, texnologik, siyosiy va madaniy aloqalarning kengayishiga, milliy chegaralarni cheksiz, turli jarayonlar, kelishuvlar va sanktsiyalar orqali, fuqarolik ongini rivojlanishiga olib keladi. Globallashuv - aloqalar va mamlakatlar o'rtasidagi o'zaro bog'liqlikni kuchaytirib, milliy davlatlar paydo bo'lishi hisoblanadi. Shunday ekan barcha sohada o‘sish bilan xalqni zo'ravonlikka boshlovchi omillarning tezda tarqalishiga ham sababchi bo‘lishi mumkin. Bunday omillarga quyidagi holatlar namuna bo‘la oladi:

-axborot texnologiyalarining rivojlanishi natijasida moliyaviy oligarxiyaning kuchayishi;

-haddan tashqari ishlab chiqarish va axborotni tarqatish, transportni rivojlantirish va tarqatish orqali savdoni rivojlantirish:

-transport vositalari, bozorga tezroq va arzonroq kirish, moliyaviy bozorlar aloqalari axborot va ba'zi transmilliy kompaniyalarda kapitalni kontsentratsiyasi, madaniy ishlab chiqarish sanoatini rivojlantirish orqali,

Iqtisodiy, ijtimoiy sohalarning jadal ravishda rivojlanishi natijasida, madaniy sohalarda kamchiliklar kuzatiladi. Bu jarayonda yurtning mahalliy qatlamiga sezilarli darajada ta'sir qiladi va milliy, aksariyat hollarda hatto hal qiluvchi rol o'ynaydi. Garchi bu ta'sir har doim ham bir tomonlama emas, u har kuni ta'sir qilish imkoniyatiga ega bo‘lib qoladi.[2]

Globallashuv jarayoni, avvalambor, jamiyat manfaatlaridan kelib chiqqan holda shakllanadi.

O‘zbekiston Respublikasi ko‘p millatli davlat qatoriga kiradi. Globallashuv natijasida chet davlatlariing ta’lim tizimi va madaniyati kirib kelayotgani hech kimga sir emas. Jumladan, kino sanoati, ijtimoiy media vositalari, moda, musiqa sanoati orqali va san'atning turli sohalari shular jumlasidan. Darhaqiqat ko‘rinib turibdiki, ta’lim bilan birga ommaviy madaniyatning kirib kelishi o‘zi bilan birga turli muammolarni, hamda muzokaralarni ham olib kiradi.[3] Quyida keltirilgan ma’lumotlar aynan asosiy muammolar sanaladi:

- milliy o'zlikni va milliy qarshilikni zaiflashtirish, millatning ona tili o‘rniga boshqa chet tillari, masalan, ingliz tilining ahamiyatini oshirish va ta'kidlash;
- shaxslar va ijtimoiy guruhlarni jamiyatdan ajratib turadigan, global intellektual qaramlikni keltirib chiqaradigan chet tilida ta'lim va xalqaro ta`limga (ya'ni, shaxsni jamiyatdan mustaqil deb hisoblash), o'tkazish;

- global kuchlarga ma'lum darajada suveren huquqlar, transmilliy kompaniyalarga yon berish va milliy davlatlarga qarshi kurash;
- fuqarolik ongini zaiflashtirish, globallashgan mamlakatlarda miya oqimini oshirish, tovarlarga asoslangan iste'mol imtiyozlarini yaratish ;
- musiqadan tortib kiyim-kechaklargacha taqlidning boshlanishi va haddan tashqari ko‘payishini kabi ahamiyatga molik muammolar nazarda tutilmoqda.[2]

Xalqaro maktab va xalqaro ta’limning kirib kelishi mamlakatlar o'rtasida turli xil parallellik va o‘xshashliklarni keltirib chiqadi. Ayniqsa, xalqaro universitetlar, diplom, innovatsiyalar, elektron sertifikatlashtirish dasturlari, interaktiv masofaviy ta’lim tizimlari, elektron kutubxonalar va elektron ma’lumotlar bazalari va mobil telefon ilovalariga muhtojlik jadal rivojlanadi. Buning natijasida axborot almashish, madaniy almashinuv tezlashadi.

O‘zbekiston davlatida xalqaro ta’lim dasturlarini milliy ta’lim tizimlari va dasturlari asosida takomillashtirish, umuminsoniy qadriyatlarga ahmiyat berilmoqda. Darhaqiqat ta’kidlash joizki, xalqaro ta’lim kirib kelishi bilan birga kadrlarni mukammal tarzda saralash ko‘rinishi ham kirib keldi. Maktablarda fidoiy pedagoglarning faoliyatida kelajak avlodni tarbiyalashda haqqoniylik, mas’uliyatlilik talab qilinadi.

Xususiy maktablar xalqaro maktab dasturlarining qisman ko‘rinishidir. Bu maktablar xalqaro madaniyat darajasi bilan oddiy maktabdan farq qiladi. Ba'zi xususiy maktablar nuqtai nazaridan aralash yondashuvga moslangan. Jumladan: Milliy dasturlar va xalqaro ta’lim, milliy til va qadriyatlar asosida.

Xalqaro ta’lim ko‘pgina olimlar tomonidan chuqur o‘rganilgan va ijobiy hamda salbiy oqibatlari haqida o‘z tadqiqotlarida bayon etilgan.

Hayden va Tompson maktablar va ta’limning 3 turi haqida quyidagicha fikr bildirilgan:

Birinchi turdagi maktablar an'anaviy xalqaro maktablardir. Bunda chet elliklarning bolalari uchun notijorat maktablari deya ta’rif berilgan;

Ikkinchi turdagi maktablar xalqaro tushuncha va missiyaga ega mafkuraviy xalqaro maktablar deb ataladi;

Uchinchi tipdagi maktablar noan'anaviy, global yondashuvni targ'ib qiluvchi asosan mahalliy boy qatlam bolalari uchun notijorat ta'lim xizmatlarini ko'rsatadigan maktablar deya ta’riflagan.[2]

Ikkinchi va uchinchi toifadagi maktablarning asosiy xususiyati shundaki, o'quvchilar o'z madaniyatidan boshqa davlat madaniyat haqida o‘rganadilar.

Timoti Uokerning “Xalqaro ta'lim - bu o'quvchilarni qamrab oladigan o'quv muhiti, ko'p tilli, ko'p madaniyatli va global yo'naltirilgan o'quv dasturidir” degan fikrlari mavjud. [4]

Xalqaro ta'limning maqsadi - istalgan xilma-xillikni ta'minlashdir, tushunish va hurmatni rivojlantirish orqali insonning ijtimoiy ahvolini yaxshilash, o'zi va boshqa xalq madaniyatlari uchun global muammo haqidagi bilimlarni targ'ib qilishdan iborat. Aniqroq qilib aytganda, xalqaro ta'lim dasturlarini berishdan

maqsad - milliy maktablarda xalqaro va milliy nizolarning oldini olish, muammolarga yechim topish, atrof-muhit muammolari, sog'liqni saqlash, shuningdek, boshqa xalqaro vaziyatlarni tushunish bilan bog'liqdir.[5]

Xalqaro ta`limning muvaffaqiyati - bu xalqaro fikrlashdir . Xalqaro fikrlash ochiqlik va boshqa madaniyatlar odamlariga qiziqishi bilan belgilanadi. Ayni davrlarda xalqaro fikrlash ko‘p tillilikka ko‘proq urg‘u beradi. Shuning uchun bugungi kun talabi maktablarda ikki tilni o‘rganish va kamida bitta kasb hunarning egasi bo‘lishni taqozo qilmoqda. Bunday ishlarni natijasini amalda ko‘rish uchun asosan, o‘quvchilar va talabalar o‘zlarining fikrlarini to‘liq, his tuygularini erkin holda o‘z ota-onasiga yetkazib berishi lozim va shart hisoblanadi. Bu fikrlarni qarama qarshi holda kuzatilsa, xalqaro ta’lim natijasida insonlarning miyasida salbiy qarashlarni kuzatish mumkin. Qisqacha qilib aytganda, xalqaro ta'lim o‘quv faoliyatini osonlashtiradi va rag'batlantiradi, bu esa ta’limning to‘g‘ri tanlovdir. Ta’limda aynan ko‘p kuzatiladigan miyaning ketishi - bu yaxshi bilim, erkin fikrlash, samarali va malakali ishchi kuchi boshqa mamlakatda tadqiqot yoki ishlash uchun chiqib ketishidir. Miyaning ketishi bilan bog‘liq holatlar hozirgi davrda ko‘p uchraydi.[6]

Xalqaro ta'lim u ko'p tilli va ko'p madaniyatli, umumiy qadriyatlar va jahon fuqarolik standartlariga mos bo'lgan, turli xil yondashuvlarga ega bo'lgan talabalarni tarbiyalashga qaratilganligini bilan e‘tiborli. Shu bilan birga, madaniyatning zaiflashuvi kabi hodisalar milliy o'ziga xosliklar, standartlashtirish, chet tilini ekspluatatsiya qilish, madaniy imperializm, miyaning ketishi va global boshqaruvchanlik paydo bo'ldi. Zamonaviy ta’lim madaniyatning tarqalishi ta’kimni ham beqarorlashtiruvchi va tezlashtiruvchi ta'sir ko'rsatdi. Xalqaro maktablar va dasturlar qaysidir ma'noda globallashuv natijasida paydo bo'lgan, vaqt o'tishi bilan mavjud bo'lishda davom etadi.

Taqlid qilinuvchi ta'limning asosiy maqsadlaridan biri jamiyatni o'ziniki qilib olishdir. Madaniy merosni yangi avlodlar uchun sog'lom meros sifatida qoldirishda, xalqaro ta'lim dasturlarini xavfli bo‘lib ko‘rinishi muammo hisoblanadi.

Xalqaro ta'limning fazilatlari va xavf-xatarlarini ko'rib chiqishda birgalikda dasturlar, shaxslar va siyosatchilarning yondashuviga ega xalqaro dasturlarni ehtiyotkorlik bilan olib borish foydalidir. Shu sababli xalqaro ta'lim dasturlari madaniyatiga nisbatan e’tiborliroq bo‘lishi lozimligidan darak beradi. Xalqaro ta’limni to‘gri munosabatda shakllantirish, har bir mamlakatni ta’limi, madaniyati va o‘zligini boshqa davlat madaniyatiga almashtirish holatini kuzatishdan ancha yiroq bo‘ladi.

Xulosa shuki, xalqaro maktablarning mamlakatga kirib kelishi, shu mamlakat fuqarolarining xalqaro fikrlarini o‘sishiga, xalqaro muammolarga to‘gri munosabat bildirishiga, chet el madaniyatini hurmat qilishiga, tarixda bo‘lgan nizoli vaziyatlarga yechim topish va shunga o‘xshash muammolarni oldini olishga yordam beruvchi sog‘lom fikr doirasiga ega bo‘lgan fuqarolarni shallantiradi. Milliy qadriyatlar asosida milliy ta’lim tizimini isloh qilish, o‘zligidan kechmaslik, madaniy merosni, milliy tilni hurmat qilish asosida xalqaro ta’lim maydoniga chiqish bugungi yoshlarimizning oldidagi maqsadi va vazifasi bo‘lib xizmat qiladi.

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ИННОВАЦИОННЫЙ ПОДХОД В КАСТОМИЗАЦИИ КУКОЛ BLYTHE: АВТОРСКАЯ МЕТОДИКА СОЗДАНИЯ ПАРИКОВ ИЗ НАТУРАЛЬНОЙ ОВЕЧЬЕЙ ШЕРСТИ

Аннотация: *Статья посвящена исследованию феномена кастомизации кукол Blythe. Особенное значение имеет подробное описание оригинальной методики создания париков для кукол Blythe из натуральных овечьих трессов с применением уникального способа клеевой фиксации. Эта технология, ставшая первым подобным примером в мировой практике, позволила достичь нового уровня эстетической выразительности и реализма, что значительно обогатило творческие ресурсы кукольного искусства. Автор подчеркивает свою роль первопроходца в данном направлении и рассматривает собственный вклад как основополагающий фактор развития кастомизации кукол Blythe. Предложенные решения стали катализаторами новых творческих поисков и инновационных подходов в оформлении художественных изделий. Статья предназначена для широкого круга исследователей и профессионалов, работающих в сферах декоративно-прикладного искусства, дизайнерского проектирования и истории культуры.*

Ключевые слова: *кукла Блайз, современное искусство, арт-объект, кастомизация, декоративно-прикладное искусство, натуральная овечья шерсть, технология создания париков, клеевое крепление*

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AN INNOVATIVE APPROACH TO THE CUSTOMIZATION OF BLYTHE DOLLS: THE AUTHOR'S METHOD OF CREATING WIGS FROM NATURAL SHEEP WOOL

Annotation: *The article is devoted to the study of the phenomenon of customization of Blythe dolls. Of particular importance is a detailed description of the original technique for creating wigs for Blythe dolls from natural sheep tresses using a unique method of adhesive fixation. This technology, which became the first such example in world practice, allowed us to achieve a new level of aesthetic expressiveness and realism, which significantly enriched the creative resources of puppetry. The author emphasizes his role as a pioneer in this area and considers his own contribution as a fundamental factor in the development of customization of Blythe dolls. The proposed solutions have become catalysts for new creative searches and innovative approaches in the design of artistic products. The article*

is intended for a wide range of researchers and professionals working in the fields of decorative and applied arts, design engineering and cultural history.

Keywords: *Blythe doll, modern art, art object, , customization, decorative and applied arts, natural sheep wool, wig making technology, glue fastening*

Введение.

Кукла Блайз, впервые выпущенная в 1972 году, обрела новую жизнь в начале XXI века благодаря сообществу художников, специализирующихся на её кастомизации. Кастомизация кукол Blythe представляет собой уникальное направление современного декоративно-прикладного искусства, сочетающее в себе элементы скульптуры, живописи, текстильного дизайна и психологии восприятия. Автор обнаружил собственную уникальную нишу в данной сфере, гармонично сочетав художественное творчество с практическими умениями, что позволило создавать оригинальные произведения, балансирующие между искусством и дизайном. С тех пор, активно участвуя в сообществе, автор поставил перед собой амбициозную цель — не только улучшать визуальную составляющую и техническое мастерство, но и привнести новые идеи, способствующие развитию всего направления.

Одним из важнейших достижений автора является разработка уникальной методики создания париков для кукол Blythe, основанной на применении натуральных овечьих тресс и клеевого крепления. Эта технология стала новаторским решением в индустрии кастомизации кукол, поскольку на момент её изобретения подобные разработки были неизвестны среди мировых специалистов-кукольников. Благодаря данной технологии существенно расширились возможности художественной выразительности и повысился уровень реалистичности образов кукол Blythe, что значительно обогатило культурное наследие сообщества и вдохновило многих последователей на дальнейшее эксперименты с материалами и формами.

Исследование проводилось комплексно, с использованием следующих научных методов:

1. историко-культурный анализ: изучалась история развития кастомизации кукол Blythe и практика применения натуральных материалов в искусстве создания кукол, выявлялись ключевые тенденции и эволюция техник.
2. эмпирическое наблюдение: изучение процесса создания париков осуществлялось путем непосредственного наблюдения. Автором фиксировались последовательные шаги, применяемые материалы и инструменты, а также промежуточные стадии работы.
3. метод моделирования: была разработана концептуальная модель производства париков, включающая выделение основных этапов, используемых инструментов и материалов.

Кастомизация кукол Блайз представляет собой не просто модификацию игрушки, но полноценное художественное высказывание. Целью деятельности автора является не только создание уникальных образов, но и

развитие новых технических решений, способных расширить художественные и выразительные возможности куклы как арт-объекта. Предлагаемая методика создания париков из натуральных трессов овечьей шерсти с использованием клеевой фиксации стала важной вехой в развитии кукольного кастома.

1. Описание метода кастомизации и технологии парика

Процесс кастомизации куклы Блайз включает несколько этапов, таких как - скульптурная доработка лица (рис.1)

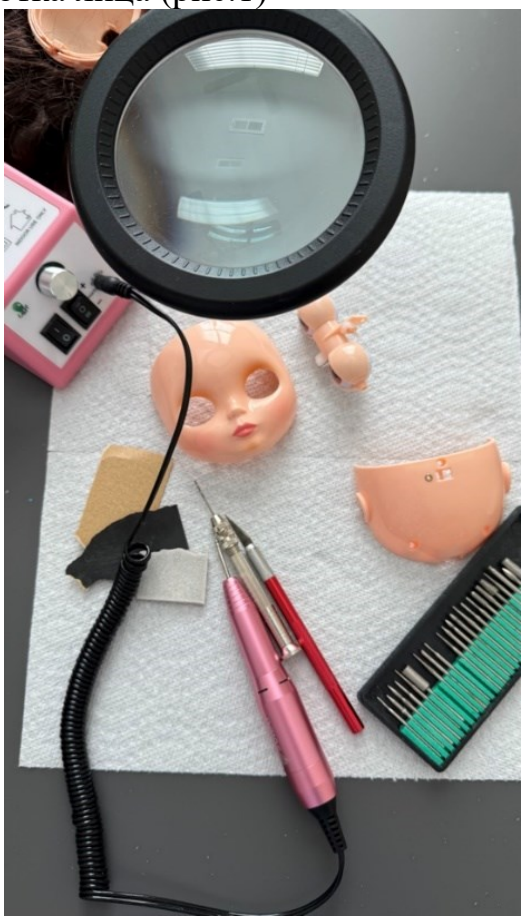

Рис.1. Процесс кастомизации куклы Блайз

А также изменение макияжа (рис.2), изготовление одежды и аксессуаров, а также создание парика.

Рис.2. Создание макияжа для куклы Блайз

Последний компонент зачастую определяет целостность образа. Столкнувшись с ограниченным выбором готовых волокон и синтетических трессов, я начала экспериментировать с натуральной овечьей шерстью, стремясь добиться большей выразительности и текстурной глубины.

Созданная автором технология включает следующие этапы:

• подбор и подготовка шерсти (мытьё, расчесывание, окрашивание натуральными и безопасными пигментами);

Создание парика начинается с отбора и подготовки натуральных овечьих трессов. Используется специально обработанная шерсть, сохраняющая природную текстуру и объем. В отличие от синтетических аналогов, овечья шерсть позволяет добиться более живого, органичного эффекта, который усиливает художественную выразительность кастомизированной куклы.

• формирование трессов вручную на специальной нити-основе;

• индивидуальное приклеивание каждого тресса к силиконовой основе, повторяющей форму головы куклы;

• финишная обработка парика (стрижка, покраска, укладка, фиксация) (рис.3).

Рис.3. Парик из овечьей шерсти для куклы Блайз

Одно из главных новшеств заключалось в использовании специального клеевого состава, безопасного для синтетических голов кукол, но при этом обладающего высокой степенью сцепления с шерстью.

Кроме того был разработан оригинальный способ нанесения клеевой основы, обеспечивающий надежную фиксацию трессов при сохранении гибкости и естественности укладки. Благодаря данным экспериментам с составом клея, автору удалось добиться прочного, но при этом податливого крепления, которое не деформирует кукольную скульптуру и остаётся долговечным при активной эксплуатации.

Данная техника впервые была представлена автором на международной онлайн-платформе для кастомайзеров, где вызвала значительный интерес. В течение нескольких месяцев после публикации фото и описания процесса наблюдалось, как ведущие мастера начали адаптировать данную методику в своих работах. Разработанный автором подход стал основой для новой волны экспериментов с натуральными материалами в мире кукольной кастомизации.

2. Уникальность и новизна методики.

На момент разработки (2017 год) данная технология не имела аналогов. В сообществе кастомайзеров Блайз использовались в основном синтетические материалы для изготовления клееного парика: канекалон, искусственные трессы, мех. Методика автора стала первой, где была последовательно реализована идея применения натуральной овечьей шерсти как основного материала для парика кукол Блайз с использованием ручной укладки трессов.

Естественный объём, высокая пластичность, способность к укладке и окрашиванию позволили автору формировать разнообразные образы — от классических до авангардных. Визуальные и тактильные характеристики готового изделия качественно отличались от существующих аналогов.

3. Распространение идеи в профессиональном сообществе.

После публикации первых работ в специализированных интернет-сообществах и на выставках кастомизированных кукол (в том числе международных), автор заметила рост интереса к данной технологии. Мастера из Европы, Азии и Америки начали внедрять аналогичный подход, в том числе ссылаясь на посты автора в социальных сетях. Некоторые адаптировали метод под свои материалы, но общий принцип остался заимствованным: ручная укладка трессов из натуральной шерсти с клеевой фиксацией.

Таким образом, технология, разработанная автором — мастером по созданию художественной куклы, — оказала непосредственное влияние на развитие сегмента кастомизации, в части создания париков, в сообществе кукольных художников.

4. Мастер-классы и образовательная деятельность

С 2017 года автор регулярно проводит очные и онлайн мастер-классы, посвящённые кастомизации кукол Блайз. Центральное место на классах занимает авторская методика создания парика по данному методу. Автор обучает участников всем этапам процесса: от подготовки шерсти до финальной укладки. Курсы пользуются спросом у мастеров из разных стран, что подтверждает актуальность и востребованность разработанной технологии по созданию париков, а также мастера и участники мастер-классов признают вклад автора как пионера в этой области.

Образовательная программа автора построена по модульному принципу и позволяет как начинающим, так и опытным художникам освоить технику в полном объёме. Также автор ведет блог, где делится практическими советами и продвижением в области кукольного искусства.

Заключение.

Работа в области кастомизации кукол Blythe, включающая разработку и внедрение метода создания париков из натуральных овечьих трессов, внесла важный вклад в развитие декоративно-прикладного искусства. Новаторство в данной сфере позволило задать новые стандарты качества и эстетики, оказать значительное влияние на профессиональное сообщество мастеров по всему миру. Полученный опыт демонстрирует высокую степень компетенции и лидирующую позицию в профессиональной области. Широкое распространение метода среди коллег и активное участие в образовательной деятельности подтверждают признание и значимость сделанного вклада в эту перспективную и быстроразвивающуюся область исскуства.

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РАЗВИТИЕ ТУРИЗМА СМОЛЕНСКОЙ ОБЛАСТИ (СОСТОЯНИЕ И ПЕРСПЕКТИВЫ РАЗВИТИЯ)

Аннотация. *В статье рассматривается состояние туристической отрасли Смоленской области. Выделяются проблемы и перспективы развития туризма на Смоленщине. Также приводятся примеры успешного развития туризма на территории Смоленского региона.*

Ключевые слова: *туризм, город, продвижение, инфраструктура.*

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TOURISM DEVELOPMENT IN THE SMOLENSK REGION (CURRENT STATE AND DEVELOPMENT PROSPECTS)

Abstract. *The article examines the current state of the tourism industry in the Smolensk region. It highlights the problems and prospects for tourism development in Smolensk. The paper also provides examples of successful tourism development within the Smolensk region.*

Keywords: *tourism, city, promotion, infrastructure.*

В настоящее время туризм является одной из доминирующих и динамично развивающихся отраслей экономики. По данным ежегодного исследования Всемирного совета по туризму и путешествиям (WTTC) на сферу туризма приходится более 11.6% мирового валового национального продукта, 5% мировых инвестиций, 11,8 % от общего числа рабочих мест. Таким образом, в настоящее время нельзя не заметить большого влияния, которое оказывает индустрия туризма как на мировую, так и на региональные экономики.

В России государством приняты и реализуются документы стратегического планирования, такие как Национальный проект «Туризм и индустрия гостеприимства», Государственная программа «Развитие

туризма», Стратегия развития туризма в Российской Федерации. Перспективами и проблемами развития туристической сферы занимаются многие отечественные ученые: А.Ю. Александрова [1], А.В. Гладкий [2], Данилова С.Н. [3], Е.А. Джанджугазова [4], Е.Г. Кропинова [5], Полухина А.Н. [6] и другие.

Пандемия и санкции кардинально изменили ситуацию в туристической сфере РФ. Так, многим российским туристам пришлось переориентироваться на отдых и путешествия внутри нашей страны, что потребовало активного развития разнообразных направлений туризма. Согласно данным Росстата, общее число туристических поездок по России в 2024 году превысило 90 млн, что на 37% больше, чем в 2021 году, и на 9% больше, чем в 2023 г.

Рассмотрим состояние туристической сферы в Смоленской области. Губернатор В.Н. Анохин в марте 2025 года в интервью «ТАСС» **оценил туристический потенциал Смоленской области.** По мнению губернатора, у смоленской агломерации огромный туристический потенциал, к примеру с января по сентябрь 2024 года Смоленщину посетило на 36% больше туристов, чем за тот же период 2023 г. Смоленская область стала более привлекательной и для иностранных туристов - в 2024 году наш регион посетили в 1,5 раза больше иностранцев, чем в 2023 году. Это туристы из Китая, Белоруссии, Турции.

В декабре 2024 года благодаря усилиям по реализации национального проекта «Туризм и индустрия гостеприимства» Смоленская область заняла **4-е место в России по динамике развития туризма.**

Смоленщина имеет выгодное экономико-географическое положение для развития туристической сферы. Близость к Москве и Белоруссии, развитая транспортная сеть, делают наш регион особенно привлекательным для путешествий. На поездку из столицы до нашего города на скоростном поезде «Ласточка» туристы затратят чуть более 4 часов, что делает наш город привлекательным для краткосрочных путешествий.

Денежные затраты на путешествие так же определяют готовность туристов посетить нашу область. К примеру, при прямом железнодорожном сообщении со Смоленщиной турист затратит на дорогу около 3000 рублей (Брянская, Орловская, Липецкая, Псковская области и др.).

Первое упоминание о Смоленске относится к 862 году, а к 882 году город стал одним из самых крупных в Древней Руси, поэтому Смоленщина богата достопримечательностями.

Приоритетными направлениями внутреннего и въездного туризма в Смоленской области являются:

1. культурно-познавательный и событийный;
2. паломнический;
3. рекреационный.

Культурно-познавательный туризм - старейший и основной вид туризма в Смоленской области, развивающийся благодаря богатому и разнообразному историко-культурному наследию. Визитная карточка региона - один из

древних русских городов Смоленск. Особой популярностью у туристов пользуется центр города со знаменитой Крепостной стеной, Свято-Успенским кафедральным собором, храмами 12 века, живописными парками Лопатинский сад и Блонье. Самым загадочным местом Смоленщины является археологический комплекс Гнездовские курганы, который является самым крупным археологическим памятником периода Древней Руси.

Смоленщина знаменита и великими людьми. Туристы могут посетить усадьбу М.И.Глинки в Новоспасском, музей заповедник А.С. Грибоедова «Хмелита», дом-музей Ю.А. Гагарина в селе Клушино, историко-архитектурный комплекс Теремок, где творили художники И.Е. Репин, М.А. Врубель, Н.К. Рерих, С.В. Малютин.

Событийный туризм представлен яркими и зрелищными мероприятиями, привлекающими туристов в Смоленскую область. Среди них ежегодный туристический фестиваль «Соловьева переправа», историческая реконструкция «Битва при Лубино», гастрономический фестиваль смоленской кухни «Луков-фест», творческий «АРТ-фест», «Танцевальная битва» и др.

Центрами паломничества являются древние города - Смоленск (Успенский собор 17 века, Свято-Троицкий собор15 века и др.), Вязьма (Свято-Троицкий собор 11 века, Иоанно-Предтеченский монастырь 16 века), Дорогобуж (Троицкий Болдин монастырь 16 века) и др.

Рекреационный туризм представлен Национальным парком «Смоленское Поозерье», Природным парком «Гагаринский», Угранским поречьем и д.р. Национальный парк «Смоленское Поозерье» в Демидовском районе наиболее популярен у туристов. В этом удивительном природном уголке находится усадьба великого русского путешественника Николая Михайловича Пржевальского. Туристы могут пройти по экологической тропе, покормить лошадей Пржевальского и зубров, посетить музей бересты.

Несмотря на успешные примеры развития туризма в нашем регионе существует и ряд проблем. Низкий уровень развития инфраструктурной среды сдерживает туристическую активность. Например, недостаточное количество гостиниц и мест общественного питания, разрушенные фасады и дороги, полуразрушенные церкви, отсутствие общественных туалетов, кадровый состав работников индустрии гостеприимства. Персонал гостиниц, экскурсоводы часто работают «по старинке», не учитывая запросы современных туристов. Средства массовой информации, рассказывающие о местных достопримечательностях, используются недостаточно. В городах возникает много проблем при попытке привлечь туристов, например, отсутствие маркетинговой концепции продвижения своего туристского продукта на рынке. Длительные сроки окупаемости и высокие риски инвестиционных проектов представляют собой еще один из негативных факторов, сдерживающих развитие туризма в Смоленской области. Поэтому в рамках программы по развитию туризма смоленского региона планируется улучшение инфраструктуры отрасли.

Одним из приоритетов является строительство новых гостиниц, поскольку нехватка размещения является проблемой для многих туристов. Важно обеспечить достаточное количество мест для размещения туристов, особенно во время пиковых туристических сезонов. Например, за две недели до майских праздников все номера в отелях Смоленска были забронированы.

В Смоленской области идет работа по развитию туристической инфраструктуры. Так, в 2024 году при федеральной поддержке были построены три туристических комплекса. Благодаря нацпроекту «Туризм и индустрия гостеприимства» возведены гостевой мини-дом «Премьер-отель» в Смоленске, туркомплекс «Бакланово-Петровское» в Демидовском районе, апарт-отель «Парк Самуйлово» в Гагаринском округе.

Губернатор Смоленской области Василий Николаевич Анохин отметил важность открытия туристско-информационных центров в Минске и Гагарине, а также планируется открытие международного туристско-информационного центра.

В Смоленской области продолжается планомерная работа по развитию туристического потенциала региона и привлечению туристов. В 2024 г. в регионе подвели итоги первого областного грантового конкурса в сфере туризма. В финал вышли 14 проектов, на реализацию которых власти направили почти 15 млн. руб. «Половина инициатив – это проведение ярких мероприятий, которые будут интересны смолянам и гостям нашей области. Остальные 7 проектов направлены на развитие туристской инфраструктуры – создание условий для активного отдыха на глэмпингах и базах отдыха, онлайн и радиогидов для гостей нашего региона», – отметил губернатор.

Итак, происходит развитие сферы туризма после пандемии и переориентации на внутренний туристический рынок. Значительное увеличение спроса потребителей туристических услуг вызывает необходимость более подробного информирования о возможностях отдыха в регионах страны. Важное значение имеют инфраструктура и квалифицированные кадры. Для формирования туристического интереса можно использовать проведение фестивалей, выставок, ярмарок, спортивных соревнований, а также развивать «ближний туризм» – поездки жителей крупных городов на небольшие расстояния.

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ПРОБЛЕМЫ И ПРИОРИТЕТНЫЕ НАПРАВЛЕНИЯ РАЗВИТИЯ ИНКЛЮЗИВНОГО ОБРАЗОВАНИЯ В ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ

Аннотация: *В статье обсуждается важность внедрения инклюзивной образовательной модели в университетах Узбекистана. Рассмотрены социально-экономические аспекты и значимость инклюзивного образования для общества, текущее состояние ВУЗов в контексте развития инклюзии, а также выявлены проблемы, препятствующие успешной адаптации этой модели. Кроме того, предложены рекомендации и предложения для эффективного внедрения инклюзивного подхода в систему высшего образования Узбекистана.*

Ключевые слова*: лица с ограниченными возможностями здоровья, модель инклюзивного образования, безбарьерная среда, высшие учебные заведения, финансовые, архитектурные, технические и технологические барьеры гуманизм, равенство.*

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PROBLEMS AND PRIORITIES FOR THE DEVELOPMENT OF INCLUSIVE EDUCATION IN HIGHER EDUCATION INSTITUTIONS

Abstract: *The article discusses the importance of introducing an inclusive educational model at universities in Uzbekistan. The socio-economic aspects and the importance of inclusive education for society, the current state of universities in the context of the development of inclusion are considered, and the problems that hinder the successful adaptation of this model are identified. In addition, recommendations and suggestions are offered for the effective implementation of an inclusive approach in the higher education system of Uzbekistan.*

Keywords: *people with disabilities, inclusive education model, barrier-free environment, higher education institutions, financial, architectural, technical and technological barriers, humanism, equality.*

Введение. В эпоху демократических преобразований в социально-экономической сфере, приоритетной задачей государства в системе высшего образования становится предоставление всем гражданам равных возможностей для получения образования. Это не зависит от их социального положения, расовой или национальной принадлежности, этнических корней, пола, вероисповедания, политических взглядов, физического здоровья, трудоустройства или места проживания.

Государство стремится к достижению этой цели, опираясь на принципы гуманизма и равенства, гарантируя каждому члену общества возможность получить высшее образование. Одним из наиболее распространенных примеров воплощения этой задачи на практике является внедрение и реализация инклюзивного образования в университетах по всему миру. Инклюзивное образование позволяет адаптировать образовательный процесс к потребностям различных групп студентов, обеспечивая их полноценное участие в учебной деятельности.

Одним из новых подходов в этой области является «Инклюзивное образование». Инклюзивная форма образования является достаточно новой формой образования, получившее широкое распространение на Западе как наиболее приемлемая и гуманная форма обучения детей с ограниченными возможностями здоровья (ОВЗ), а также детей из групп социального риска (дети из неблагополучных семей, дети иммигрантов, беженцы, пострадавшие от насилия, войн, террористических актов). [1.стр.18]

Методы исследования. В процессе исследования автором были использованы такие общепринятые методы познания, как диалектика, научная абстракция, индуктивный и дедуктивный методы, монографическое наблюдение, сравнительный анализ, анализ нормативно-правовых актов, обзор литературы и периодической печати.

Анализ и результаты. В современном понимании, «инклюзия» означает интеграцию детей с особыми образовательными потребностями в общий учебный процесс вместе с их ровесниками. Такой подход к образованию признан во всём мире как наиболее действенный способ обеспечить успешное освоение учебной программы для лиц с ограниченными возможностями здоровья.

Согласно мнению М.Т.Матанцевой, получение образования представляет собой ключевой элемент для людей с инвалидностью, так как оно служит одним из наиболее эффективных инструментов для их личностного роста и улучшения социального положения. С точки зрения индивидуального развития, высшее образование предоставляет возможность выбирать жизненные цели, способствует духовной и финансовой независимости, а также укрепляет психологическую устойчивость. Этот аспект особенно значим для молодежи с ограниченными возможностями здоровья, так как образование помогает гармонизировать их жизнь и адаптироваться к вызовам окружающей реальности. [2.стр.5]

Приобретение профессиональных навыков людьми с инвалидностью открывает перед ними возможности для социальной адаптации и финансовой самостоятельности. Это, в свою очередь, трансформирует данную группу из пассивных пользователей социальных услуг в активных и креативных участников общества. Исходя из этого, можно утверждать, что внедрение и развитие инклюзивного образования в Республике Узбекистан является критически важным как с гуманистической позиции, так и в контексте создания правового демократического государства с рыночной экономикой.

В последние годы Республика Узбекистан демонстрирует значительные достижения в области инклюзивного образования. Эти улучшения становятся заметными благодаря внедрению множества нормативных документов и ратификации международных конвенций, направленных на защиту прав и интересов людей с ограниченными возможностями. В частности:

1. 7 июня 2021 года Президент Республики Узбекистан Ш.М. Мирзиёев подписал Закон Республики Узбекистан №ЗРУ-695 «О ратификации Конвенции о правах инвалидов» (НЬЮ-ЙОРК, 13 ДЕКАБРЯ 2006 г.) [3.п.1], который предусматривает: ратифицировать Конвенцию о правах инвалидов и признать, что инвалиды обладают правоспособностью наравне с другими во всех аспектах своей жизни.

2. 13 октября 2020 г. принят указ Президента Республики Узбекистан Ш.М.Мирзиёева №4860 «О мерах по дальнейшему совершенствованию системы образования и воспитания детей с особыми образовательными потребностями» [4.п.1-2], которым предусмотрено:

- совершенствование законодательной базы для инклюзивного образования;
- разработка системы подготовки, переподготовки и повышения квалификации педагогов, работающих в области инклюзивного образования;

• укрепить материально-техническую базу и обеспечить учреждения, которые реализуют инклюзивное образование, специализированными устройствами (например, подъёмниками, пандусами, перилами и.т.д.), а также необходимой литературой, учебными материалами и оборудованием для различных профессий;

• внедрение современных информационно-коммуникационных технологий и инновационных инициатив в области инклюзивного образования является важной задачей. Необходимо предпринимать шаги для гарантии прав каждого ребенка с особыми образовательными потребностями на доступ к инклюзивному образованию;

• улучшить методы обучения в инклюзивной среде и постепенно внедрять принципы индивидуализации в образовательный процесс;

3. 8 октября 2019 года принят Указ Президента Республики Узбекистан Ш.М.Мирзиёева №УП 5847 «Об утверждении Концепции развития системы

высшего образования Республики Узбекистан до 2030 года» [5.п.1-3], которая предусматривает:

- расширить спектр и улучшить качество образовательных сервисов, доступных для студентов с особыми образовательными потребностями, являющейся приоритетной задачей.
- необходимость активно продвигать инклюзивное образование, повсеместно внедряя технологии, адаптированные под индивидуальные особенности каждого учащегося.
- создания специализированных условий для проживания студентов с ограниченными возможностями здоровья, обеспечив их комфортное пребывание в общежитиях и учебных корпусах ВУЗов.
- предпринять шаги по обеспечению образовательных организаций необходимыми учебными материалами, включая литературу и методические разработки, а также разработать систему материальной поддержки и поощрения студентов из социально уязвимых слоев населения.

Данный факт подчеркивает значительную заинтересованность правительства Узбекистана в планомерном и всеобъемлющем распространении инклюзивного подхода в сфере образования.

Несмотря на энергичные усилия правительства Республики Узбекистан по интеграции инклюзивного образования в ВУЗы страны, высшее образование сталкивается с определенными трудностями, которые отрицательно сказываются на адаптации инклюзии к образовательной среде. К числу наиболее значимых из этих проблем, по нашему мнению, относятся:

Финансовые барьеры - обеспечение учебных заведений дополнительными материалами для занятий детей с особыми потребностями и привлечение специалистов по работе с ними требует существенных бюджетных затрат, которые часто отсутствуют у многих высших учебных заведений или находятся под строгим контролем со стороны центральных структур.

Архитектурные барьеры - большинство ВУЗов Узбекистана испытывают дефицит инфраструктуры, соответствующей потребностям людей с инвалидностью, что представляет собой критическую преграду на пути их доступа к образовательному процессу. К препятствиям в образовательных учреждениях страны можно отнести: нехватка пандусов и лифтов, а также дефицит транспортных средств, приспособленных для перемещения лиц с ограниченными возможностями здоровья. В крупных городах, как правило, общественный транспорт (метрополитен, трамваи, троллейбусы, автобусы) не оборудован дополнительными входами для инвалидных колясок, что создает физические препятствия для людей с ограниченными возможностями. Кроме того, отсутствие лифтов, пандусов, опорных перил, специализированного учебного оборудования и

адаптированных кабинетов в школах и других образовательных учреждениях значительно затрудняет процесс обучения для этой категории граждан. Данные факторы создают серьезные ограничения для полноценного включения людей с инвалидностью в социальную и образовательную среду.

Технические и технологические барьеры - по мнению коллектива авторов во главе с А.И.Ахметзяновой, современный образовательный процесс в ВУЗе является высокотехнологичным в плане использования технических и информационных средств обучения, которые для студента с ОВЗ могут выступать как барьером, так и ресурсом. С одной стороны, сложная лабораторная работа, включающая использование технических средств, обязательных для многих специальностей и направлений подготовки, может быть затруднена или опасна для студента с нарушениями зрения, слуха или моторики. С другой стороны, современные компьютерные и информационные технологии позволяют предоставлять информацию в доступной для учащегося с нарушениями органов чувств форме: электронные лупы для слабовидящих и голосовые программы для слепых, звукоусиливающая аппаратура и мультимедийные средства для слабослышащих. Компьютерные тренажеры позволяют учащимся с двигательными нарушениями выполнять экспериментальные действия, недоступные им в симуляционном режиме. Разнообразные электронные образовательные ресурсы не могут и не должны полностью заменить живое общение с преподавателем и другими учащимися при различных формах аудиторных занятий, но могут существенно помочь учащемуся с ОВЗ. В связи с этим обеспечение инклюзивного образовательного процесса техническими средствами получения и передачи информации в формах, отвечающих особым образовательным потребностям обучающихся с нарушениями различных нозологий, а также разработка и применение соответствующих педагогических технологий является эффективным средством преодоление барьеров этого типа. [6.стр.31]

В процессе исследования были выявлены несколько проблем, связанных с недостаточной адаптацией образовательного процесса для людей с ограниченными возможностями здоровья. В частности, это выражается в следующем:

- крайне слабое обеспечение учебно-методическими материалами в высших учебных заведениях;
- психологические трудности, вызванные существующими стереотипами;
- отсутствие профессиональной подготовки преподавательского состава ВУЗов для работы с людьми с ограниченными возможностями здоровья;
- частичное внедрение безбарьерной среды. Хотя некоторые ВУЗы предлагают доступную среду обучения для студентов с инвалидностью, остаётся проблема доступности окружающей инфраструктуры. Это

вынуждает людей с инвалидностью выбирать учебные заведения не по своему желанию, а по возможности получения образования.

Выводы и рекомендации: Для решения обозначенных проблем необходимо объединить усилия государства, местных органов власти и руководства высших учебных заведений для более эффективного внедрения инклюзивной модели образования в университетах. Для успешного внедрения инклюзивного образования в ВУЗах Узбекистана рекомендуется следующее:

- адаптировать нормативную базу высшего образования в соответствие с международными стандартами;
- пересмотреть и реконструировать архитектурные и строительные параметры зданий ВУЗов, чтобы они соответствовали нуждам и стандартам образования как для здоровых студентов, так и для студентов с инвалидностью;
- разработать учебно-методические и воспитательные программы инклюзивного образования в соответствии с международными стандартами;
- обеспечить обновление автопарка крупных городов современными транспортными средствами, оборудованными для перевозки людей с инвалидностью.
- активно применять систему льгот и преференций для ВУЗов, предприятий и организаций, занимающихся обучением и трудоустройством людей с инвалидностью.

Внедрение этих мер позволит расширить доступ к высшему образованию для людей с инвалидностью в республике и создаст эффективные механизмы для развития их личности и повышения социального статуса, что является основной целью проводимых реформ в этом направлении.

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СОВРЕМЕННЫЕ ТЕХНОЛОГИИ УПРАВЛЕНИЯ ОРГАНИЗАЦИЕЙ

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ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ В СИСТЕМЕ УПРАВЛЕНИЯ ПРОЕКТНОЙ ДЕЯТЕЛЬНОСТЬЮ В ГОСУДАРСТВЕННЫХ И МУНИЦИПАЛЬНЫХ ОРГАНАХ ВЛАСТИ

Аннотация: *В статье рассматриваются вопросы внедрения и использования инновационных технологий в системе управления проектной деятельностью в государственных и муниципальных органах власти. В качестве развития теоретических аспектов управления проектами анализируется состав инновационных технологий системы управления проектной деятельностью и предлагается авторское определения «инновационных технологий в системе управления проектной деятельностью в государственных и муниципальных органах власти».*

Ключевые слова: *инновационные технологии, система управления проектной деятельностью, государственные и муниципальные органы власти, проектное управление, управление проектами.*

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INNOVATIVE TECHNOLOGIES IN THE PROJECT MANAGEMENT SYSTEM IN STATE AND MUNICIPAL AUTHORITIES

Abstract: *The article discusses the issues of the introduction and use of innovative technologies in the project management system in state and municipal authorities. As a development of the theoretical aspects of project management, the composition of innovative technologies of the project management system is analyzed and the author's definition of "innovative technologies in the project management system in state and municipal authorities" is proposed.*

Keywords: *innovative technologies, project management system, state and municipal authorities, project management, project management.*

Инновационные технологии, хотя и не являются основным фокусом системы управления проектной деятельностью в государственных и муниципальных органах власти, чаще всего упоминаются в контексте цифровизации государственного управления, что особенно актуально в связи с инициацией государственного проекта «Экономика данных и цифровая трансформация государственного управления» [1]. М.А. Полаженко в рамках инноваций в проектном управлении выделяет важную роль информационно-коммуникативных технологий [2]. Эти технологии, включая автоматизированные системы и аналитические платформы, повышают прозрачность и эффективность, что критически важно для государственных проектов с их публичной отчетностью. В своих исследованиях Н.З. Сайфудинова, ключевыми преимуществами таких технологий выделяет автоматизацию процессов, улучшение взаимодействия между участниками проектов и снижение затрат, усиление координации между различными участниками проектной деятельности» [3].

Также следует отметить, что в целом инновационные технологии в системе управления проектной деятельностью включают не только внедрение цифровых инструментов, но и методические и управленческие инновации в подходах, методах и стандартах проектного управления.

Необходимость внедрения инноваций в систему управления проектной деятельностью также связана с тем, что современный этап развития общества характеризуется стремительным внедрением инноваций, которые становятся ключевым фактором повышения эффективности в различных сферах, включая управление проектами.

В рамках системы управления проектной деятельностью в органах власти инновационные технологии, по нашему мнению, представляют собой комплекс цифровых инструментов, методов и подходов, направленных на оптимизацию процессов, повышение гибкости и результативности проектной деятельности. При этом надо отметить, что многие исследователи, такие как А. Атаев и Н.С. Дзензелюк, подчеркивают особую значимость инновационных технологий, акцентируя внимание на трансформации управленческих парадигм, необходимости улучшения коммуникаций и адаптации системы управления проектной деятельностью к динамично меняющимся условиям [4].

Значимость инновационных технологий особенно ярко проявилась в условиях глобальных вызовов, таких как пандемия COVID-19, введение карантинных мер в 2020 году выявило необходимость в инструментах удаленного взаимодействия, в том числе и в проектной деятельности, таких как Mirapolis, Zoom и Skype. Подобные платформы, как отмечают исследователи, включая Н.С. Дзензелюк, не только обеспечили непрерывность проектной деятельности, но и способствовали формированию новых моделей гибкости и адаптивности. Подобные технологии выходят за рамки технического обеспечения, влияя на социокультурные аспекты управления, такие как баланс между работой и личной жизнью, что

подтверждает трансформацию организационных культур под воздействием технологических инноваций.

В условиях необходимости внедрения инновационных технологий особое внимание уделяется передовым технологиям, таким как виртуальная (VR) и дополненная реальность (AR), а также искусственный интеллект (ИИ). Инструменты проектного управления, построенные на этих технологиях, позволяют визуализировать результаты проектов, прогнозировать риски и оптимизировать процессы. Особенно важно использование искусственного интеллекта и аналитики данных, которые обеспечивают поддержку предиктивного анализа в системах управления проектной деятельностью, что соответствует идеям Р. Шмидта о необходимости интеллектуализации управления проектами [5].

Инновационные технологии формируют новую парадигму, где управление проектами становится не только более технологичным, но и более интуитивным, ориентированным на предвидение и минимизацию ошибок. Инновации способствуют повышению гибкости, прозрачности и результативности, что особенно важно в условиях цифровой трансформации государственного управления.

Таким образом, по нашему мнению, инновационные технологии в системе управления проектной деятельностью в органах власти представляют собой интегрированный комплекс современных цифровых инструментов, а также инновационных методов и подходов управления, направленных на повышение эффективности, прозрачности и адаптивности процессов планирования, реализации и контроля проектов, реализуемых в государственном секторе. Инновационные технологии в системе управления проектной деятельности включают автоматизированные системы управления, платформы для удаленного взаимодействия, технологии виртуальной и дополненной реальности, а также искусственный интеллект, обеспечивая оптимизацию управленческих процессов, минимизацию рисков и учет общественных потребностей при строгом соблюдении принципов открытости и устойчивого развития.

Данное определение подчеркивает особенности и контекст государственного и муниципального управления, где основной акцент делается на прозрачности, подотчетности и социальной ориентации проектов. Предлагаемое определение учитывает как технологическую составляющую, так и институциональные особенности, обеспечивая сбалансированный подход к применению инноваций в органах власти.

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